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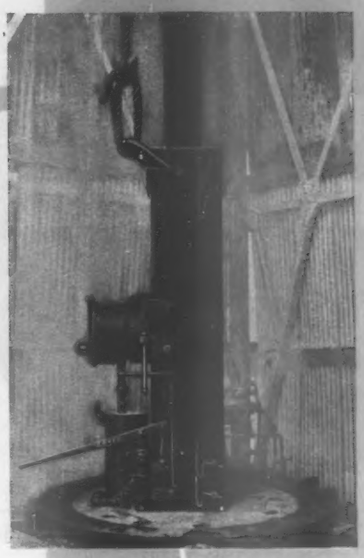
SAVE TIME, MONEY AND UNNECESSARY HANDLING

By Straightening Kellys and Drill Pipe The Modern Way



Baker Kelly Straightener in position on rotary table

WHILE THEY ARE SUSPENDED IN THE DERRICK

It's Easily and Economically Done with a BAKER PORTABLE HYDRAULIC KELLY AND PIPE STRAIGHTENER

This highly efficient and easily operated device utilizes the principle of the hydraulic ram, applying the force built up by a manually operated pump to the bend in the Kelly, Drill Collar, or Drill Pipe, as it hangs suspended in the derrick.

COMPLETELY PORTABLE

The entire unit is completely portable (weighing only 1200 pounds), and can easily be transported to the well on a small "pick-up" truck or trailer and set up on the rotary table by means of the catline.

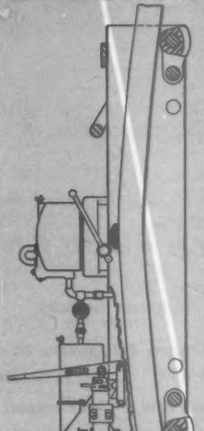
ADVANTAGES OF STRAIGHTENING AT THE WELL

Even though shop facilities may be close at hand, there are a number of important advantages in straightening at the rig—advantages that result in substantial savings in time and money. Probably more Kellys are bent during transportation and in being laid down and picked up than from any other cause. Frequently a Kelly that has just been straightened will again be bent during the process of transporting it back to the well, rolling it off the truck and dragging it into the rig.

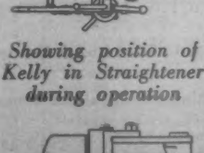
When the BAKER KELLY STRAIGHTENER is used, the job is done right on the rotary table with the Kelly hanging in its normal position. The hazards involved in transportation and handling are entirely eliminated as are also the cost of transporting the Kelly to and from the well, plus the time and expense entailed in removing and replacing it. In foreign or isolated fields, however, the Baker Kelly Straightener is considered indispensable as the cost and loss of time involved in transporting a bent Kelly or drill pipe to and from a distant shop makes it a serious matter.

CAN BE ADAPTED FOR HORIZONTAL PIPE STRAIGHTENING OPERATIONS

By the attachment of a simple, easily installed device the Baker Kelly Straightener can also be adapted for efficient, horizontal pipe straightening work. The same high efficiency and portability is maintained, plus the advantage of being able to utilize the Straightener for a wide variety of pipe straightening operations around the field and in the shop.



Detailed view showing how ram contacts bend in Kelly or Drill Pipe



Showing position of Kelly in Straightener during operation

Showing position of Drill Pipe in Straightener during operation

Send today for Complete Details and Prices

See Pages 270-272 of the 1940 Composite Catalog

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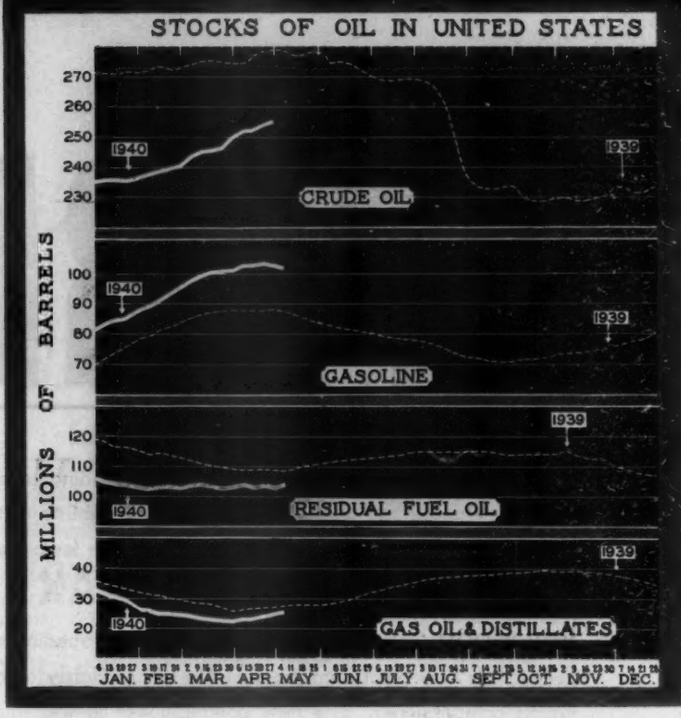
BAKER PORTABLE KELLY AND PIPE STRAIGHTNER

Trends

Markets Influenced By Changes in War Activity of Europe



THE recent changes in the European war fronts and the assumption that even more important shifts will materialize in the near future are of major interest to the oil industry in this country and are being widely discussed. So far the German control over Denmark and most of Norway has brought further reductions in the export movement of petroleum products from this country to Europe. Norway, Denmark, and Sweden in normal times consume about 55,000 bbl. daily of petroleum products. In the same area surrounded by belligerents, Netherlands has a peacetime demand of 30,000 bbl. daily and Belgium 20,000 bbl. None of these countries has crude production of its own and each is a buyer of petroleum supplies in this country and South America. Reports show that the movement of petroleum products has decreased over the past month and until the status of shipping and the position of neutral countries are determined shipments will continue far below normal. It is feared by some that war bases in Norway will make Germany a more serious threat to oil shipments to the Allies from the two Americas than has been the case so far.

CRUDE PRODUCTION *3,683,169 bbl. daily average—down 164,408 bbl. One year ago 3,574,643 bbl.*

CRUDE STOCKS *256,670,000 bbl. as of April 27—up 1,789,000 bbl. One year ago 278,444,000 bbl.*

GASOLINE STOCKS *102,063,000 bbl. as of May 4—down 389,000 bbl. One year ago 87,209,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *103,043,000 bbl. as of May 4—up 491,000 bbl. One year ago 109,459,000 bbl.*

GAS OIL AND DISTILLATES *25,658,000 bbl. as of May 4—up 661,000 bbl. One year ago 26,600,000 bbl.*

REFINERY RUNS *3,505,000 bbl. daily week ended May 4—down 50,000 bbl. One year ago 3,275,000 bbl.*

In the Mediterranean there have been additional developments which point to early changes in the movement of petroleum in that area. A large part of the petroleum produced and consumed in Europe and Asia passes through the Mediterranean. The 80,000 bbl. daily petroleum production of Iraq, the 50,000 bbl. daily water exports of Rumania, and the small exports of the U.S.S.R. front on the Mediterranean or the connecting Caspian Sea. In addition that part of Iran's and the Far East's production consumed in Europe is transported through the Mediterranean. Italy and less important Mediterranean countries are substantial tanker buyers of petroleum in this country and South America. It is apparent that the closing of the Mediterranean would necessitate overnight changes in the world's movement of petroleum. The obvious conclusion is that it would result temporarily at least in more business being placed in this and South American countries, assuming that the tanker situation is untangled and boats are available for the movement of the oil. The possible forced destruction of oil properties in Rumania, Iraq, and other countries to prevent them from being acquired by invaders is another phase of the oil-export picture which becomes more confusing as the war areas expand.

The slow export business brought about by conditions outlined above is held responsible for additional weakness in the gasoline market at Gulf Coast and East Coast points applying to both domestic and foreign shipments.

REFINERY RUNS - BBL. DAILY
CRUDE PRODUCTION - BBL. DAILY
CRUDE OIL PRODUCTION
REFINERY CRUDE RUNS
1940
1939
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

DAILY AVERAGE PRODUCTION FOR WEEK

	May 4, 1940	Bur. Mines May est. of demand	May state allowable	Apr. 27, 1940
Oklahoma City	98,500	.....	.....	95,500
Seminole fields	37,950	.....	.....	38,225
Remainder of state	276,525	.....	.....	281,325
Total Oklahoma	412,975	408,100	408,100	415,050
East Texas	396,646	.....	.....	396,548
West Texas	233,291	.....	.....	282,195
North Central Texas	135,657	.....	.....	140,856
Texas Panhandle	77,539	.....	.....	78,288
East Central Texas	80,893	.....	.....	87,906
Gulf Coast Texas	348,511	.....	.....	411,550
Southwest Texas	95,250	.....	.....	118,393
Total Texas	1,367,787	1,344,200	1,421,176	1,515,736
North Louisiana	69,475	.....	.....	69,565
Gulf Coast Louisiana	224,500	.....	.....	219,000
Total Louisiana	293,975	264,500	293,080	288,565
California	589,750	592,600	592,000	590,500
Kansas	147,650	158,100	158,100	152,600
Arkansas	69,125	64,500	70,147	69,640
Mississippi	7,205	5,800	.....	7,510
Eastern fields	107,200	109,400	.....	108,300
Illinois	422,028	392,900	.....	436,468
Michigan	62,274	63,200	.....	61,878
New Mexico	115,010	103,900	107,000	115,010
Rocky Mountain area	88,190	93,800	.....	86,320
Total United States	3,683,169	3,601,000	.....	3,847,577

SPARKS . . . FROM THE NEWS

LIQUID-GAS STORAGE: Eastern oil men, attending a meeting in West Virginia last week, learned of the possibility of storing gas in liquid form during slack periods to provide for peak loads when necessary.

NEW BROOM: The industry is applauding the appointment by Louisiana's Gov.-elect Sam Jones of Maj. B. A. Hardy as conservation commissioner. The new commissioner is well qualified for the post, albeit he has accepted it only temporarily.

COMES OF AGE: Recycling can truly be said to have put on long pants, as demonstrated by the gigantic three-plant operations in Anderson County, Texas. A special section of this issue of The Oil and Gas Journal reports on all phases of this noteworthy development.

SUBTRACTION: A statistician points out that California so far this year has produced about 72,000,000 bbl. of oil from its reserves without the discovery of a new field. Deeper drilling has been unsuccessful except the 8-3 zone in Montebello.

STUCK: Anybody who has seen a June bug on its back and struggling frantically to get on its feet has a pretty fair idea of the condition of the natural-gasoline industry at this juncture.

UNEASINESS: The break in gasoline prices at the Gulf and on the East Coast, long foreseen, came in the past week. A development that adds nothing to the peace of mind of interior refiners.

RECORD: The largest 24-hour production—8,031 bbl. in a full day's test—from an Illinois oil well was recorded last week by a Devonian lime well in the Salem field. The state's production again declined.

CHRISTENING: High-octane gasoline was substituted for the traditional champagne in the christening ceremonies attending the dedication of Kansas' new cooperative refinery. The gasoline was poured into an old horse-drawn tank wagon.

FIVE YOUNG MEN: Time was when "nine old men" were accused of throwing monkey wrenches into well-laid plans. This week it was five young men who did the tossing, their target being the oil industry which was not looking for this blow.

BEEHIVE: With the opening date only 10 days away, the International Petroleum Exposition grounds at Tulsa present a picture of feverish activity as workmen hasten to get the exhibits ready for those that shortly will inspect what's new.

GOOD START: The earnings of the first 16 oil companies reporting for the first quarter of 1940 showed earnings of $40,326,708, a gain of more than 300 per cent over same quarter in 1939. Financial observers agree that a stronger gasoline market is necessary to assure similar comparison over balance of year.

THUMBS DOWN: The voice of the potent Chamber of Commerce of the United States was added to that of the oil industry in opposing federal regulation as that body closed its twenty-eighth annual meeting in Washington last week.

OIL AREA: A study of Europe's petroleum supplies leaves no doubt that the inclusion of the Mediterranean in the active war area would be of major importance to the oil industry here and elsewhere.

PREPARATION: There evidently won't be much of a dull season in the light fuels this year. With last winter's record-breaking demand fresh in their minds, buyers already are starting to buy supplies for next fall.

FIVE FOR, TWO AGAINST, TWO NOT VOTING . . .

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Members of the United States Supreme Court, which this week figured in the oil news. The justices are (standing) Douglas, Reed, Frankfurter and Murphy; (seated) Roberts, McReynolds, Chief Justice Hughes, Stone and Black. The two dissenters in the Madison opinion were Justices Roberts and McReynolds. Chief Justice Hughes and Justice Murphy did not participate. (See story on opposite page)

"Rule of Reason" Abandoned In Madison Decision

By HENRY D. RALPH

WASHINGTON, D. C., May 6.—The Supreme Court today upheld the conviction of 12 major oil companies and five individuals at Madison, Wis., in January 1937 on charges of violating the Sherman Antitrust Act through a tank-car buying program resulting in fixing prices of gasoline in the Mid-Continent area.

The court reversed the decision of the seventh Circuit Court of Chicago which last year ordered a new trial. Four justices joined Justice Douglas in the majority opinion. Justice Roberts wrote a vigorous dissent, concurred in by Justice McReynolds, contending that the conviction should be set aside. Chief Justice Hughes and Justice Murphy did not participate.

The Government won on every contention that was appealed, and while the court criticized conduct of government counsel during the trial in many particulars, it held this did not constitute reversible error.

The chief point in the case was whether the tank-car buying program actually fixed prices and restrained competition and if so whether this restraint was reasonable and undertaken simply to eliminate competitive abuses. In an opinion which greatly bolsters the Government's antitrust drive, Justice Douglas held that any restraint of trade is illegal and that the reasonableness of the restraint and of the prices resulting is not an issue. In this case he held there was evidence that the combination had the purpose to raise prices and while the buying program was not the only market influence it had an effect on prices, making it illegal. The defendants removed some of the competition through a well-organized program in which the timing and strategic placement of buying orders kept a floor under spot markets and clearly curtailed competition, Justice Douglas held, using such langauge as "any combination which tampers with price structures is engaged in an unlawful activity. . . . Nor is it important that the prices paid by the combination were not fixed in the sense that they were uniform and inflexible. . . . The machinery employed by a combination for price fixing is immaterial. . . . The power to fix prices exists if the combination has control of a substantial part of the commerce in that commodity."

The Supreme Court held there is no merit in defendants' claims that government officials sanctioned the buying program or that trial court improperly excluded offers to prove necessity for stabilizing markets.

On the procedural matters which the Circuit Court considered errors justifying a new trial, the Supreme Court upheld the Government consistently. The use of grand-jury transcript to refresh witnesses' memory was held permissible under the circumstances and not violating the numerous rules against such use. The arguments to the jury by government counsel were held to be improper but not sufficiently prejudicial when viewed against the background of the entire trial to warrant setting aside the verdict. Granting new trials to some defendants did not impair the conviction of the others since it was not necessary to prove that success of the conspiracy depended on the cooperation of all. The variants between the indictment and the agreement proved, such as elimination of the trade journals, was held not fatal since there was evidence that the agreement was consummated by other means. As to jurisdiction, the court held that the conspiracy influenced jobber prices in Wisconsin sufficiently to permit the Madison court to hold trial.

Dissenting Opinion

In his dissent, Justice Roberts upheld virtually every contention of the oil companies and even went beyond the Circuit Court and held that the Madison court had no jurisdiction since there was no proof that Wisconsin prices were fixed. He held that there was no evidence that defendants agreed to or did fix prices and that the jury should have been charged to acquit if the buying program had no substantial tendency to restrain competition. He also held the Government's charge to the jury was sufficient to set aside the verdict, and went into detail to show that counsel's argument was improper and highly prejudicial.

Government attorneys hailed the decision as an important victory which will aid the Department of Justice in its antimonopoly campaign.

The decision departed from the "rule of reason" interpretation of the Sherman Act in 1911. The court held then that the Sherman Act prohibited only "unreasonable" restraints of interstate commerce.

The companies, in defending their action, contended they had engaged only "in a voluntary cooperative effort" to remove a "competitive evil—distress gasoline" and that the resulting prices were not unreasonable.

The Department of Justice charged the defendants with conspiring to raise prices by concerted purchases of gasoline from independent refiners in the Mid-Continent and in the East Texas oil field in 1935 and 1936. It was alleged that the purchases were made at a figure which would increase the "spot" tank-car price—upon which gasoline prices in that area are based.

Justice Douglas said the 1911 antitrust decisions "have no application to combinations operating directly on prices or price structures."

"For over 40 years," he said, "this court has consistently and without deviation adhered to the principle that price-fixing agreements are unlawful per se under the Sherman Act and that no showing of so-called competitive abuses or evils which those agreements were designed to eliminate or alleviate may be interposed as a defense."

Asserting "there was abundant evidence that the combination had the purpose to raise prices" and that "there was ample evidence that the buying program at least contributed to the price raise," he added:

"Proof that there was a conspiracy, that its purpose was to raise prices, and that it caused or contributed to a price rise is proof of the actual consummation or execution of a conspiracy under Section 1 of the Sherman Act."

"Under the Sherman Act," he said, "a combination formed for the purpose and with the effect of raising, depressing, fixing, pegging or stabilizing the price of a commodity in interstate or foreign commerce is illegal."

The two dissenters—Justices Roberts and McReynolds—contended that "no case decided by this court has held a combination illegal solely because its purpose or effect was to raise prices" and that "the criterion of legality has always been the purpose or effect of the combination unduly to restrain commerce."

Justice Roberts, who wrote the dissent, held that the tribunal in 1911 and later had laid down a "firmly established" principle that the antitrust law prohibits only "unreasonable" restraint of commerce.

Justice Douglas said, however, that Congress had not "left with us the determination of whether or not particular price-fixing schemes are wise or unwise, healthy or destructive. It has no more allowed genuine or fancied competitive abuses as a legal justification for such schemes than it has the good intentions of the members of the combination. If such a shift is to be made, it must be done by the Congress."

Defendants were Socony-Vacuum Oil Co., Inc., Wadhams Oil Co., Cities Service Oil Co., Continental Oil Co., Pure Oil Co., Shell Oil Co., Inc., Sinclair Refining Co., Mid-Continent Petroleum Corp., Phillips Petroleum Co., Skelly Oil Co., Globe Oil & Refining Co. (Oklahoma), Globe Oil & Refining Co. (Illinois); Charles E. Arnott and H. T. Ashton of Socony-Vacuum, R. H. McElroy, Jr., of Pure Oil, P. E. Lakin of Shell, and Robert W. McDowell of Mid-Continent.

The companies were fined $5,000 each and the individuals $1,000 each in the District Court.

CHRONOLOGY OF THE MADISON CASE

The case dates back to an investigation of oil marketing early in 1936 when the Department of Justice announced the matter would be placed before a federal grand jury at Madison, Wis.

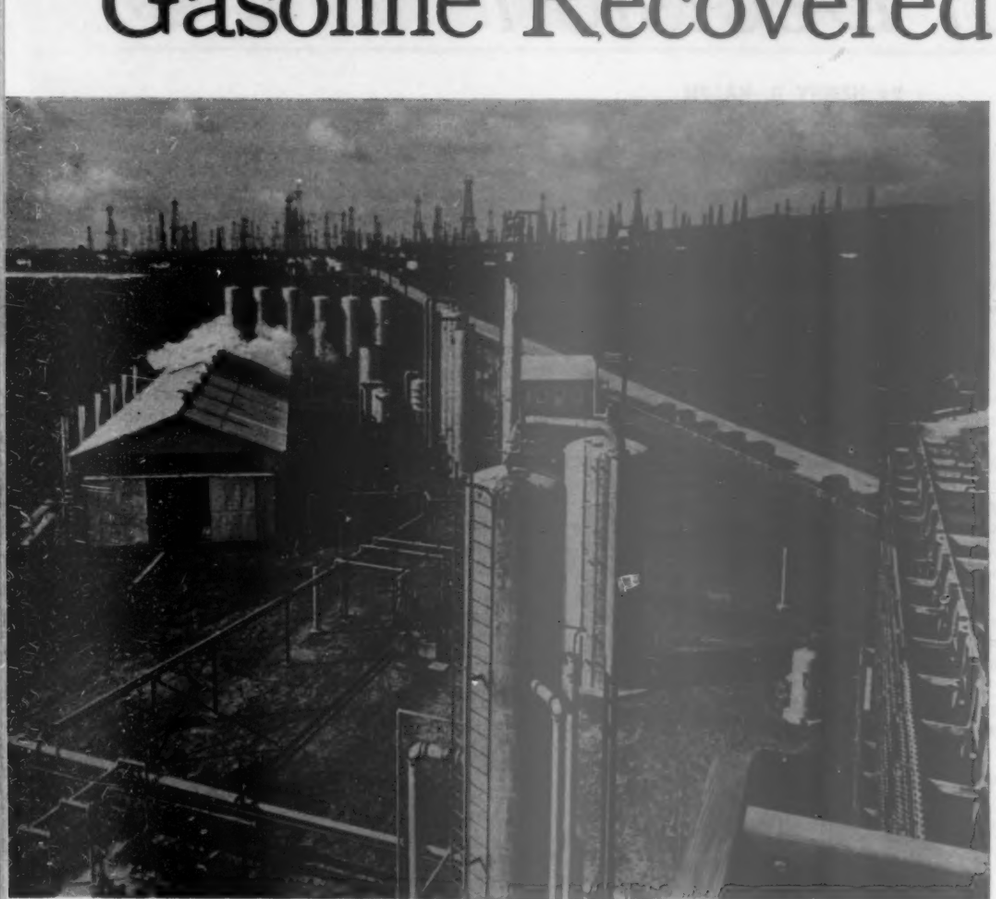
In July 1936, an indictment was returned in the federal court at Madison against 23 oil companies, 3 trade journals, and 56 individuals charging them with violation of the Sherman Antitrust Act through a so-called East Texas buying program and a so-called Mid-Continent buying program.

The legality of the grand jury having been questioned, a second grand jury was called, and in December 1936, returned two indictments, one against 24 oil companies, 3 trade journals, and 56 individuals, charging a conspiracy to violate the Sherman Act through the operation of the buying programs, and the other against 23 oil companies and 46 individuals, charging a conspiracy to violate the Sherman Act through the use of jobber-margin contracts. The latter case has not been tried.

In October 1937, the indictment involving the buying programs came on for trial in the federal court at Madison before Judge Patrick T. Stone

(Continued on Page 23)

6,000,000 Gallons of Natural Gasoline Recovered Daily



A typical California natural-gasoline plant is seen in this general view of the O. C. Fields plant at Montebello. At left is the compressor house, in the foreground is a raw storage tank and evaporator, in the center are the stabilizer and low-pressure tanks and in the background is the field office. A portion of the cooling tower is shown at the extreme right with the Montebello field as a background

By W. T. ZIEGENHAIN

A complete survey of natural-gasoline plants in the United States including names of company executives and key operating personnel starts on Page 93

TABLE 1—RELATIONSHIP BETWEEN NATURAL GASOLINE AND CRUDE-OIL PRODUCTION IN THE UNITED STATES, OVER THE PAST 20 YEARS
(Barrels annually)

	Natural gasoline	Crude oil
1918	6,727,000	355,928,000
1919	8,370,000	378,367,000
1920	9,161,000	442,929,000
1921	10,713,000	472,183,000
1922	12,044,000	557,531,000
1923	19,434,000	732,407,000
1924	22,235,000	713,940,000
1925	26,307,000	763,743,000
1926	32,305,000	770,874,000
1927	38,657,000	901,129,000
1928	42,326,000	901,474,000
1929	52,271,000	1,007,323,000
1930	52,631,000	898,011,000
1931	43,617,000	851,081,000
1932	36,281,000	785,159,000
1933	33,810,000	905,656,000
1934	36,556,000	908,065,000
1935	39,333,000	996,596,000
1936	42,770,000	1,099,687,000
1937	49,177,000	1,279,160,000
1938	51,347,000	1,214,355,000
1939	49,896,000	1,264,256,000

EXCEPT for two brief periods in the life of the natural-gasoline industry to date, the operations and output of its plants have followed the trend of crude-oil production. The exceptions came in 1933 and 1939. In those years, crude-oil production increased compared with that of the previous year while natural gasoline declined.

It is reasonable to expect the production of these two commodities to follow similar trends because natural-gasoline-plant operations are made to depend upon oil-producing practices. As new oil-producing fields are discovered and developed, natural-gasoline plants are invariably added, first as a means of utilizing and conserving the gas which accompanies the crude oil, and secondly, to facilitate pressure-maintenance work.

Similarly, as restrictions are placed upon oil production they automatically apply to the gas production. This is particularly true if a definite gas-oil ratio must be maintained by order of the state or is done voluntarily to conserve the natural energy of the common reservoir.

The practice of prorating oil production throughout Texas, Oklahoma, New Mexico and California, the principal natural-gasoline producing states, has greatly influenced plant operations there and has tended to bring the output of the two commodities into an even closer relationship than before proration.

Some idea of the relationship which has existed since 1910 may be gained from the accompanying graph and a more exacting comparison may be made from the data contained in Table 1. This covers the past 20 years or the period in which

TABLE 2—NUMBER OF NATURAL-GASOLINE PLANTS, PRODUCTION, AND VALUE OF OUTPUT, 1911-1939

Year	Number of plants operating	Estimated quantity of natural gas treated (cu. ft.)	Natural gasoline production gallons	Natural gasoline value at plant
1911	176	2,476,000,000	7,426,000	$ 532,000
1912	250	4,688,000,000	12,081,000	1,157,000
1913	341	9,889,000,000	24,061,000	2,458,000
1914	386	16,895,000,000	42,653,000	3,106,000
1915	414	24,064,000,000	65,365,000	5,151,000
1916	596	208,705,000,000	103,493,000	14,331,000
1917	886	429,288,000,000	217,884,000	40,189,000
1918	1,004	449,109,000,000	282,536,000	50,364,000
1919	1,191	480,404,000,000	351,535,000	64,197,000
1920	1,154	496,431,000,000	384,744,000	71,788,000
1921	1,058	465,097,000,000	449,934,000	61,815,000
1922	917	545,139,000,000	505,832,000	72,711,000
1923	1,067	875,711,000,000	816,226,000	77,268,000
1924	1,096	1,016,276,000,000	933,861,000	82,233,000
1925	1,081	1,040,390,000,000	1,127,470,000	120,383,000
1926	1,102	1,206,300,000,000	1,363,090,000	136,412,000
1927	1,119	1,341,248,000,000	1,641,144,000	118,688,000
1928	1,078	1,473,434,000,000	1,814,034,000	138,944,000
1929	1,087	1,959,294,000,000	2,233,688,000	158,410,000
1930	1,035	2,088,778,000,000	2,210,494,000	128,160,000
1931	937	1,790,119,000,000	1,831,918,000	63,732,000
1932	830	1,499,756,000,000	1,523,800,000	49,244,000
1933	779	1,551,464,000,000	1,420,000,000	54,368,000
1934	766	1,776,172,000,000	1,535,360,000	60,523,000
1935	715	1,822,000,000,000	1,651,986,000	70,940,000
1936	700	1,815,000,000,000	1,796,340,000	84,572,000
1937	696	2,108,800,000,000	2,065,434,000	97,125,000
1938	633	2,371,131,000,000	2,155,574,000	79,756,000
1939	615	2,305,195,000,000	2,095,632,000	67,060,000

the proration has been under development.

It is interesting to note that despite the increased output of the natural-gasoline industry and the discovery of crude-oil deposits in many new areas in the past 20 years, the number of gasoline plants has consistently declined. Now the number of operating plants approximate 600 whereas 20 years ago the number approximated 1,000. In the same period, however, the combined capacity of the operating plants has increased from about 9,000,000 gal. a day to slightly over 11,000,000 gal. and the present production of the 600 plants is considerably above the highest output ever attained by the 1,000 plants 20 years ago.

This is because the capacity and output of each plant has been made larger to cope with the decline in the market value of the products. Some idea of the decline in this market may be gained from the average yearly published prices for 26-70 natural gasoline or its nearest grade (AA or A) at Oklahoma plants. Following are these averages based upon weekly quotations in The Oil and Gas Journal:

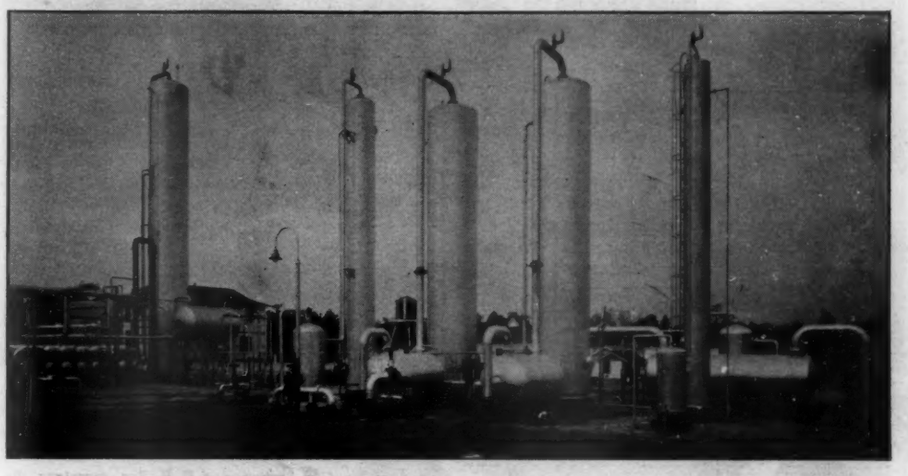
Year	Cents per gal.	Year	Cents per gal.
1923	9.13	1932	2.22
1924	8.66	1933	2.90
1925	12.02	1934	2.60
1926	9.45	1935	3.20
1927	5.75	1936	3.61
1928	7.44	1937	3.67
1929	6.83	1938	2.71
1930	5.24	1939	3.17
1931	3.01		

The natural result of lower market prices has been the elimination of certain units, the consolidation of some within a given area so that one plant would take the gas normally going to several, and the abandoning of plants in depleted areas at a faster rate than new ones could be justified in new producing fields. (See Table 2.)

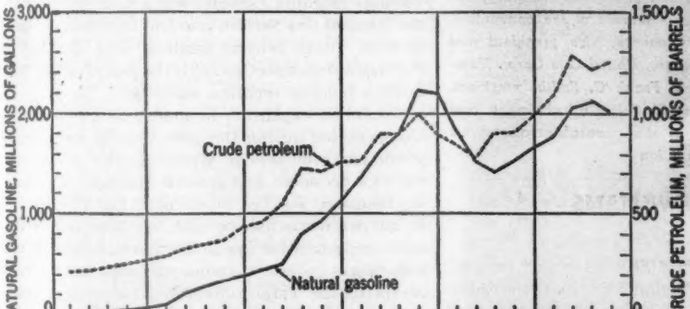
The latter factor is of particular interest because it involves another problem, that of deciding what constitutes a replacement plant. Obviously, the plant of today is not the same as a plant of 20 years ago. In that time the capacity of the average plant has trebled, the number of products has increased and the investment has increased proportionately. The average plant is shown now to have a capacity of 17,000 gal. daily. This would have been a very large plant 20 years ago.

It now appears that the "boom" period in natural-gasoline-plant operations came between 1920 and 1930 and since the latter date, the industry has been adjusting itself to a more substantial routine. The natural-gasoline industry is not building a plant wherever and whenever oil and gas are found. The survey that precedes the building of any plant in a promising area takes into account the probable output of gas under proration, the probable life of the field and of course the richness of the gas. More recently, the industry has given recognition to two other important factors, namely, the octane-blending value of the natural gasoline to be secured from the gas and the relationship in the hydrocarbon content of the gas. Naturally, a 26-70 gasoline which has a high-octane-blending value or good lead susceptibility will be more readily sold than one with a low value and similarly a gas which contains a high proportion of isomers with respect to its methane content will be favored over one which would be difficult to process for the recovery of polymerization charging stock.

The combination of the latter factors has influenced the recovery of larger quantities of natural gasoline in East Texas and the expansion of natural-gasoline plants there until the area now takes second rank as a source of natural gasoline. East Texas moved ahead of Kettleman Hills, California, in 1939 and at present is producing at the rate of 500,000 gal. a day while Kettleman Hills is operating at a rate more nearly like 350,000 gal. per day. These two areas are exceeded only by the Panhandle of Texas where production is at the rate of about 700,000 gal. per day. These three areas supply one-fourth of all the natural gasoline produced in the United States. Other important areas include Oklahoma City and Seminole in Oklahoma and Long Beach and Ventura Avenue in California. Recognition must also be given to the rapidly increasing importance of fields along the Gulf Coast of Texas and Louisiana while the Appalachian area continues to supply a rather constant and substantial quantity year in and year out. Plants in New Mexico and Illinois have also expanded in importance within the past 2 years.



Above: Modern absorption and stabilizing equipment



Left: Trend in the annual domestic production of crude oil and natural gasoline. Note consistency of the two except for 1933 and 1939

TABLE SHOWING TRENDS IN THE NUMBER OF NATURAL-GASOLINE PLANTS AND THEIR COMBINED CAPACITIES

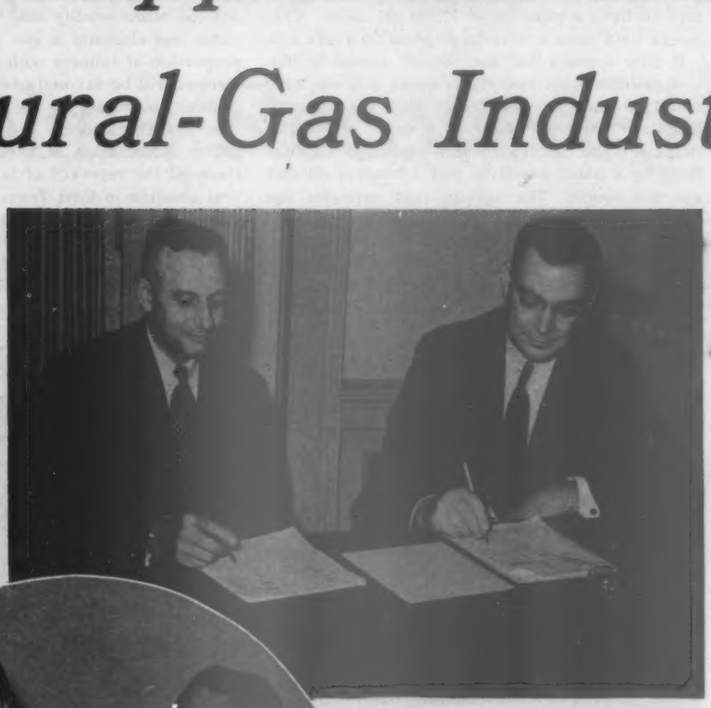
	No. of plants	Daily capacity (gallons)
May 1, 1940	620	11,308,813
May 1, 1939	653	10,832,081
May 1, 1938	680	10,888,507
May 1, 1937	710	10,691,352
May 1, 1936	841	10,083,687
May 1, 1935	850	9,909,797
May 1, 1934	882	10,241,989
May 1, 1933	919	10,308,354
May 1, 1932	948	10,536,182
May 1, 1931	987	10,531,511
May 1, 1930	1,071	9,541,320
May 1, 1929	1,124	8,695,727
May 1, 1928	1,229	7,865,652
May 1, 1927	1,148	6,947,264
May 1, 1926	1,063	5,121,000
May 1, 1925	1,143	4,642,561

DISTRIBUTION OF PLANT CAPACITIES AMONG STATES

	No of plants		Daily capacity (gallons)	
	1940	1939	1940	1939
Arkansas	8	8	167,800	107,660
California	96	101	3,073,300	3,012,300
Colorado	1	1	6,000	6,000
Illinois	18	30	69,043	27,826
Kansas	15	17	314,900	327,270
Kentucky	3	3	36,400	35,500
Louisiana	28	27	530,700	472,880
Michigan	3	3	30,000	22,500
Montana	1	1	15,000	16,000
New Mexico	7	6	340,000	200,000
Ohio	11	11	42,600	47,600
Oklahoma	109	120	1,920,650	2,124,970
Pennsylvania	82	86	97,943	99,343
Texas	154	151	4,182,550	3,897,850
West Virginia	78	82	357,127	349,852
Wyoming	6	6	124,800	84,800
Total	620	653	11,308,813	10,832,081

Note—May 1, 1940, includes 25 plants with 203,850 gal. daily capacity listed as shut down. May 1, 1939, includes 38 plants with 264,325 gal. daily capacity listed as shut down.

New Opportunities Awaiting Natural-Gas Industry



Above: Elmer F. Schmidt, vice president and operating manager, Lone Star Gas Co., Dallas, Tex., chairman of the Natural Gas Section, and E. H. Poe, secretary, discussing various phases of the convention. Left: A. B. Grosbeck, vice president and general manager, United Gas Corp., Houston, Tex., and Frank C. Smith, president, Houston Natural Gas Co., chairman and cochairman of the general arrangements for the convention

By NEIL WILLIAMS

HOUSTON, Tex., May 7.—New conceptions of the opportunities of the natural-gas industry for expansion, and its responsibilities in the development of greater utilization of gas as a factor in stimulating improved business conditions in the country generally, were formulated at the thirty-fifth annual convention of the Natural Gas Section, American Gas Association, at Houston this week. The convention, which opened Monday and continued through Thursday, was regarded by all present as being one of the most important and constructive ever held by the section. Final count of the registration is expected to show more than 1,500 persons in attendance. Contributing to the interest was the seventeenth annual conference of the Distribution Section, held in conjunction with the natural-gas convention for the first time.

Expressing the keynote of the convention, Elmer F. Schmidt, Dallas, chairman of the Natural Gas Section, in his address at the joint session of the two sections Tuesday morning declared:

"Never before has the natural-gas industry been more alert to its responsibilities and opportunities."

At the same time he added that only the ability of the industry to peer into new business frontiers would control its advancement. While urging increased vigor in spreading the industries' various lines of endeavor, Mr. Schmidt did not lose sight of the rapid growth the industry already has had and the vast scale of its present operations.

Is Young Industry

"The natural-gas industry," he said, "is a relatively young industry. Its nation-wide expansion started in 1927. Research and technological skill, coupled with free and private enterprise and a mobile monetary system in our national economy, helped the industry to open the vast markets it now serves and to meet the demand with adequate supply. In spite of unusual restrictions, excessive regulation, and exorbitant taxes, the industry is still moving forward in a mile-a-minute tempo toward a brighter future."

He stressed the point that while the industry had been driving forward along the utilization front, it had not lost sight of developing the production and transmission fields to the highest possible efficiency.

"Conservation," he said, "is and always has been one of the industry's principle concerns. Progress is being made to reduce waste to a minimum."

Walter C. Beckjord, executive vice president, Columbia Gas & Electric Corp., New York, president of the American Gas Association, in his address on "The Natural-Gas Industry—100 Years of Progress," told of the strides taken in the expansion of the natural-gas industry. The industry has had a phenomenal growth, he said.

Charles R. Bellamy, chief engineer, gas department, Columbia Gas & Electric Corp., chairman of the joint committee on summer air conditioning, addressed the gathering on "The Company Program for Sale of Summer Air Conditioning." He visualized air conditioning as offering one of the biggest fields the natural-gas industry now has for developing greater utilization of gas.

John H. Warden, general sales manager, Oklahoma Natural Gas Co., Tulsa, addressed the session on "Institutional Advertising and Publicity," and William A. Dougherty, counsel, Standard Oil Co. of New Jersey, New York, explained the Federal Power Commission procedure under the Natural Gas Act.

Group Conferences

A major part of the convention was devoted to group conferences dealing with industrial gas sales, domestic sales, transmission, distribution, production, accounting, accident prevention, and employe education. General sessions were held Tuesday and Wednesday mornings and at luncheons Monday, Tuesday and Wednesday noons. Tuesday morning's session was a joint meeting for the Natural Gas Section and the Distribution Conference. Other general sessions were devoted to the Natural Gas Section with the Distribution Conference holding separate meetings.

Continued expansion in industrial gas business was reported during the past year in an address at the luncheon session Wednesday by D. W. Harris, vice president and general manager of Arkansas Louisiana Gas Co., Shreveport, La. The growth in industrial gas use, he said, has been one of the most important factors in the development of the natural-gas industry. Industrial sales during 1939 of six of the major integrated natural-gas companies of the South and Southwest accounted for 65.1 per cent of the total volume of business and 37.4 per cent of the gross revenue of these companies. The business of these companies represented 32 per cent of the total natural-gas sales in the country during that year.

Urging companies to promote further utilization of gas for industrial purposes, Mr. Harris said it is essential that companies maintain an active industrial department, capable of furnishing surveys and detailed information to prospective industries. He called attention to the importance of developing gas reserves, which, he emphasized, requires the maintenance and operation of geological and exploration organizations. Continuing, he said:

"From the relation of industrial-gas sales volumes to total sales volumes, it is apparent the effect of this business is very important in geological, exploratory, and development work, permitting large-scale operations in these activities. This in turn permits the use of modern scientific exploratory methods; reduces unit costs of developing adequate underground reserves; and provides ample current-production capacity to meet the maximum demands of preferred customers. The availability of adequate supplies of gas for industrial usage contributes to the development of nat-

ural resources in a given territory by providing low-price fuel. The completion of this cycle in turn contributes to increased domestic and commercial loads and to the ability of a natural-gas pipe-line company to extend domestic services to communities and territories which otherwise could not be reached."

H. W. Graham, director of metallurgy and research, Jones & Laughlin Steel Corp., Pittsburgh, Pa., discussed the work being done by the steel industry in providing better materials for the natural-gas industry.

said, "has been to a great extent dependent upon the improvement and extension of transmission facilities. The industry grew only as technical advancement made possible transportation of gas to increasingly distant markets. Today few of the major natural-gas markets have a nearby adequate source of gas but are supplied from producing fields hundreds of miles away, by means of long-distance, high-pressure transmission lines. Thus, transmission facilities and their economics have become increasingly important and are today a major phase of the natural-gas industry. As the

would be employed only for peak demand, resulting in a very low factor for the added facilities and consequently a lower load factor for the entire system. The alternative is the provision of storage facilities that will result in an improved transmission load factor."

At the production conference, Dr. R. L. Huntington, director, and Charles D. Schmidt, graduate student, School of Chemical Engineering, University of Oklahoma, presented a paper dealing with problems and economics involved in the production of distillate fields as these pertain to the be-

P. C. Ford, engineer, Kansas City Gas Corp., Kansas City, Mo.; R. T. Bergh, George Roper Corp., Rockford, Ill.; Jack Torbert, Wyandott County Gas Co., Kansas City, Kans.; Harold D. Grothusen, Gas Advisers, Inc., New York City; T. R. Burner, Cities Service Gas Co., Bartlesville, Okla.; A. F. Cox, gas engineer, Amarillo Oil Co., Amarillo, Tex.

"If the steel industry had not reached the active and widespread research position it has, it would be in a very much poorer position to serve the gas industry with pipe or other things that may be required," he explained. "Research in the steel industry will not only directly and indirectly help in extending the use of gas or gas products, but it will also make better tools available to the industry with which to work, and it will very definitely extend the use of gas and gas products through the application of versatile steels to appliances which are involved in the use of these products."

Left: Alexander Forward, managing director, American Gas Association, and F. H. Lerch, Jr., Gas Co., Inc. (Standard of New Jersey), New York. Right: Carl U. Daniels, vice president, Oklahoma Natural Gas Co., Tulsa, and J. French Robinson, president, Peoples Natural Gas Co., Pittsburgh, Pa.

Problems of Research

The contribution to the development of the natural-gas industry by the studies of the main technical and research committee was discussed by H. C. Cooper, Hope Natural Gas Co., Pittsburgh, Pa., chairman of the committee. Research during the year, he said, was directed to further standardizing of materials and apparatus used in all divisions; assistance in solution of problems in the construction of new transportation systems; to all sorts of technical matters pertinent to the growing gasoline industry, and standardization of gas measurements.

A symposium on "Natural-Gas Storage and Its Effect on Transmission Operations" was a feature of the Monday production-group conferences. J. French Robinson, president, Peoples Natural Gas Co., Pittsburgh, Pa., chairman of the production committee, presided.

A. A. Chadwell, superintendent, gas-control department, Ohio Fuel Oil Co., Columbus, Ohio, presented a paper as part of the symposium. He listed six advantages of underground storage: Improved load factor, increased flexibility of availability and utilization, conservation of gas, fulfillment of purchase-gas contracts, storage of horsepower, and added assurance of continuity of service.

"The growth of the natural-gas industry," he

transmission of gas has increased in relative importance, so have its accompanying problems. One is transporting the maximum day demands.

"This problem can be solved either by expansion of the transmission facilities or providing some type of storage near enough to the market that it may allow the existing transmission facilities to be operated at an improved load factor. To increase the transmission facilities means the investment of sums which would be prohibitive in many cases without an accompanying increase in rates. Since the rates in many communities are not adequate for the present investment, it is obvious additional transmission investment is not advisable. Further, in most cases, the existing systems are adequate to take care of the base load and additional facilities

havior of liquids in retrograde condensation. These authors pointed out the distillate fields on the Gulf Coast are becoming an increasingly important gas reserve, and development of production practices in these fields to eliminate gas wastage demands the attention of the natural-gas industry.

General arrangements were directed by A. B. Groesbeck, vice president and general manager, United Gas Corp., and Frank C. Smith, president Houston Natural Gas Co., as chairman and co-chairman. Walter Spears, United Gas Pipe Line Co., Houston, Tex., was chairman of the entertainment committee; George D. Wilson, Houston Natural Gas Co., publicity committee; K. L. Simons, division manager, United Gas Corp., housing committee, and Mr. Smith, reception committee.

Experiment With Liquefied Natural Gas for Storage

By W. V. HOWARD

CHARLESTON, W. Va., May 3.—A joint meeting of the Appalachian Geological Society, the geological section of the West Virginia Academy of Sciences, the Clarksburg Oil & Gas Men's Association and the oil and gas section of the Engineers' Society of Western Pennsylvania, was held at the Hotel Kanawha here today.

The morning session consisted of an inspection trip to the John J. Cornwell compression station of Hope Natural Gas Co. This station distributes gas from the Oriskany sand field near Charleston to West Virginian and eastern Ohio points. At present gas is transmitted under operating pressures of around 600 lb., which will be increased to 1,000 lb. At this pressure, the carrying capacity of the company's line will be 75,000,000 cu. ft. per day. There is also a gasoline plant with a capacity of 10,000 gal. per day.

Of major interest is an experimental plant for liquefying natural gas, which is stored in a tank insulated with cork at a pressure of from 5 to 10 lb. and at a temperature of —250° F. Gas coming from the compressor plant at pressures of approximately 600 lb. is reduced to 550 lb. and the last traces of carbon dioxide, sulfur and water removed. It then passes through a condenser where it is cooled to approximately —250° F. by the boiling liquid ethylene. At this temperature, methane and, of course, all of the other constituents of the gas are liquefied. The liquefied gas is then stored in a tank of 2 per cent Ni-steel which is insulated by sheets of compressed cork having a total thickness of about 24 in.

The ethylene gas is compressed to under 350-lb. pressure and liquefied with ammonia at 0° F., returning to the heat exchanger, where pressure is reduced and the liquid ethylene returns to the gaseous phase.

Experiments were performed showing the effects of the low temperature of —250° on various metals. Half-inch boiler plate immersed in liquid methane becomes so brittle that it can be broken easily with a small hammer. Brass, copper, and monel metal retain much of their strength and ductility, even at these reduced temperatures.

Thermocouples placed at different depths in the cork insulation indicate the cork forms a most effective insulator, the temperature 4 in. from the outer surface being —17.° It is calculated that only 1 per cent of the liquefied gas is vaporized in 24 hours and that addition of another 8 in. of cork will reduce this loss to less than one-fourth of 1 per cent.

The practical value of this experimental work lies in the possibility of storing gas in liquid form during slack periods so as to provide for peak loads without the necessity of enlarging transmission and producing capacities to allow for these peaks. The small amount of loss during storage can be recycled, or can be turned into the lines for use. Another possibility is transportation of liquefied gas from low-priced areas into high-priced areas, although this would require the construction of especially insulated tankers which would also require a recycling unit to return the vaporized gas to storage. An important factor is the reduction in cost of storage as 1 cu. ft. of liquid natural gas is equivalent to 600 cu. ft. in the gaseous state.

Right: K. F. Treschow, Gov. Homer A. Holt of West Virginia, W. O. Ziebold, V. F. Bowyer and J. E. Billingsley were among those in attendance at the joint meeting. Below: Panoramic view of the John J. Cornwell compression station of the Hope Natural Gas Co.

As gas in the Appalachian area brings from 12 to 18 cents at the well, successful operation of this process in that region would be of particular interest to operators in areas where the returns from gas wells are very much less.

At the present time, liquefied gas is vaporized and turned into the lines at the rate of 500,000 cu. ft. per day on passing through a 10-ft. section of 10-in. pipe in which steam is passed through 32 ⅝-in. tubes.

Growth of Natural Gas

At the afternoon session, the principal speaker was Dr. Paul H. Price, state geologist of West Virginia. Dr. Price's topic was "The Future of Natural Fuels in West Virginia." Natural gas was first used for industrial purposes in West Virginia as early as 1841 when it was encountered in a well being drilled for salt brines. The gas was piped to the plant and used for evaporating the brines. Gas production was not of great importance until long-distance transportation proved feasible in 1883.

In the production of coal, oil and gas, West Virginia lagged behind Pennsylvania by a period of about 20 years and it is thought the increase in Pennsylvania's oil production during recent years may be duplicated in West Virginia by reason of the developments of secondary recovery methods as well as the impetus to deeper drilling now being felt throughout the whole eastern region.

The following table shows the past production and estimated proven reserves of fuels in Pennsylvania and West Virginia. All figures are reduced to billion pounds:

	Pennsylvania		West Virginia	
	Past production	Reserves	Past production	Reserves
Coal	12,119	86,930	6,885	151,000
Oil	274	51	114	13
Gas	306	(?)	350	150

From this it appears that coal will become increasingly important in this region, especially in view of the growing convertibility of one type of fuel into the others.

Clifford Hodges, of Halliburton Oil Well Cementing Co., discussed quick-setting gypsum cements and their uses. The fact that these cements are not affected by gas makes them of considerable value in areas of high-pressure gas where blowouts are frequent.

Although the West Virginia Geological Survey has studied many hundreds of sets of samples, it is impossible to obtain or study cuttings from every well, and operators are thus required to correlate drillers' logs with the survey's petrographic logs. Dr. J. H. C. Martens, petrographer of the West Virginia Survey, has therefore compared his results with the drillers' logs and presented an interpretation of drillers' logs based on this comparison. Although many formations are correctly named by the drillers, there is a definite tendency to report much more lime than is actually encountered. Much of this "lime" is actually hard shale, siltstone and sometimes sand, particularly in the thick section of upper Devonian shales encountered in the Appalachian fields.

On the other hand, there is a predilection to call productive limestones "sands" because of a prejudice against limestone. This is particularly true of the basal oolitic portion of the Greenbrier limestone which is sometimes productive and which operators would prefer to consider Big Injun sand. Frequently, also, the Big Injun is reported, even where absent, by drillers who expect to find it and encounter a hard shale instead. The Newburg dolomitic pay within the Devonian limestone section is also frequently referred to as a sand, whereas it is actually a pure dolomite.

Owing to the fact that drillers report colors on samples which contain large quantities of mud, certain important reddish-gray and greenish-gray beds are missed in drillers' logs as they are simply reported as "gray."

It was also pointed out in discussion that many cherty limestones were also frequently reported as "sands" with consequent confusion which sometimes leads to expensive errors in correlation. The widely reported "St. Peter sand" of Ohio was also stated to be actually a very hard dolomite and there is still considerable doubt as to the occurrence of this formation in much of Ohio.

The final paper was presented by Veleair C. Smith, who discussed certain aspects of world marketing of fuels. Contrary to general opinion, the price of one fuel in distant parts of the world frequently has a definite bearing upon local prices. Mr. Smith considers that Appalachian coal and oil operators are in a position to benefit greatly from the present war in Europe by paying greater attention to export possibilities to South America. The war has done much to overcome the 50 to 75-cent differential, due to the high rail-freight rates to the seaboard, between the cost of transporting English or American coal to South American ports. The recent trend in South America is toward a greater use of fuel in power generation, for which the high-grade bituminous coals of the Appalachian district are especially suited. This trend also increases the South American demand for high-grade lubricants furnished by Pennsylvania Grade crudes.

Extreme left: Burt Nuzum, division superintendent, Hope Natural Gas Co. Left: Gordon Gulley, Gulf Oil Corp., Pittsburgh, Pa., and A. Oscar Wolfe, Texas Co., New York. Mr. Wolfe was the engineer in charge of the recently completed Barco Pipe Line, in Colombia

STATE CAPITALS...

TEXAS

A 3-MONTH-OLD PRORATION ORDER is generally expected to be issued following the state-wide proration hearing at Austin on May 20 by the Railroad Commission of Texas. Commissioner Jerry Sadler on Saturday revoiced his intention to join in the issuance of a 90-day order covering the months of June, July and August last Saturday. Commissioner Thompson likewise reiterated that he would press again this month his plea for an extended order. Thus since Chairman Smith last month said he would favor a 3-month order beginning in June, it is very likely that a majority of the commission will sign such an order, if not all three.

Although expressing fear that the market may be approaching an unstable period, Mr. Sadler said he did not believe conditions later this month would interfere with the plan for a 3-month order. Thus at the hearing various angles of the market situation as related to the desirability of a 3-month order will probably be raised. Also, as at the past two hearings, much discussion will probably be devoted to the question of whether the commission should hold Texas' flow to the Bureau of Mines estimate.

The weekly allowable table prepared by the commission revealed that the state's production will probably be nearer the bureau's figure during May than was first thought. Average allowable for the month was approximated at 1,416,361 bbl. daily, but with an estimated 56,654-bbl. underproduction resulting from wells not producing their allowable production was expected to average about 1,359,707 bbl. daily. This figure did not include at 2,588-bbl. reduction in the Wasson field's allowable, from 34,088 to 31,500 bbl., so that overproduction of the bureau's figure will probably be less than 13,000 bbl. daily.

SUSPENSION OF THE ORDER REVISING the proration formula used in the Panhandle fields, which had aroused numerous protests, was ordered by the Railroad Commission on Saturday. The order was issued on March 28 and was to have been effective May 1, but was deferred indefinitely so that the commission might devote additional study to reservoir conditions. The suspended order proposed a formula embodying acreage, with a 10-acre proration unit, and bottom-hole pressure for distributing allowable production in excess of marginal. With suspension of the new formula, proration in the field will continue under the old plan. This plan provides for distribution on the basis of marginal plus potential, but due to low field allocations in effect is straight per-well allowables in the vicinity of the marginal allowance.

CRUDE-OIL STOCKS IN TEXAS in the week ended April 27, the latest figures available, increased 1,741,000 bbl., or at the rate of 248,714 bbl. per day, making the total stocks in the state 80,431,000 bbl., and a total gain for April of over 4,000,000 bbl. and a total gain for 9 weeks of nearly 9,000,000 bbl.

MICHIGAN

IN A BULLETIN to members A. J. Weideman, executive secretary of the Oil and Gas Association of Michigan, announces that the Michigan Tax Commission named the following assessments per well in 1940:

Central Michigan or basin area: $2,200 per well, which includes one derrick; extra rig assessed at $900. Van Buren and Allegan counties: $600 per well; Kent, Ottawa, and Muskegon counties, $700 per well.

Ogemaw and Arenac counties: The Ogemaw Crude Oil Association has asked the tax commission for a revision of previous assessments in their two counties. These figures should be definite in 10 days or 2 weeks.

Monroe County: Wells with rigs over them will take Ogemaw assessments; wells without rigs, that of Kent and Ottawa, or $700.

Gas wells: All wells will be assessed at $500, this being a reduction of like amount from previous years. Some gas wells are cemented, but this figure is intended to cover an average ownership of wells.

Tubing or line pipe in stock: 2-in., 12 cents; 3-in., 25 cents; 4-in., 35 cents. Abqve includes lead line from well to tank, and also each well's proportion of two tanks and separator.

ARKANSAS

THE SUIT OF THE LION OIL REFINING CO. of El Dorado v. the Arkansas Oil and Gas Commission opened in El Dorado May 6 before a three-judge federal court. The suit, contesting production allocation of one of Lion's leases in the Jones sand pool of the Schuler field, Union County, asks revision of the proration formula in the gas-driven pool to include the thickness factor, as well as the acreage and bottom-hole pressure factors, which now constitute the bases for the formula.

ALLOWABLE PRODUCTION in Arkansas in May, fixed by the Arkansas Oil and Gas Commission last week at 70,147 bbl. per day, was distributed as follows: Atlanta (lime), 1,640 bbl.; Buckner, 2,385 bbl.; Dorcheat, 1,200 bbl.; Magnolia, 19,941 bbl.; Schuler, 2,800 bbl.; Village, 1,351 bbl.; total controlled fields, 44,317 bbl.; settled fields, 25,830 bbl.

OIL-STATE GOVERNOR . . .

M. CLIFFORD TOWNSEND, governor of Indiana, was born in Blackford County, Indiana, August 11, 1884. He graduated from Marion Normal College in 1907, and 2 years later was elected county superintendent of schools in Blackford County, which position he held for 10 years. He married Nora Harris of Grant County in 1910 and became manager of his father-in-law's farm. In 1923 Mr. Townsend was elected to the state legislature; in 1925, county superintendent of schools in Grant County; in 1932, lieutenant governor and in 1936 became governor

KANSAS

ALLOWABLE PRODUCTION in Kansas in May, established by the Kansas Corporation Commission, will be the same as the Bureau of Mines' estimate of demand, which was 158,100 bbl. per day. The April allowable was 151,000 bbl. per day, which also conformed to the Bureau of Mines' estimate.

ILLINOIS

PUBLIC OPPOSITION to increased taxes and the necessity of Illinois legislative candidates to avoid definite commitments on controversial issues during the current political campaign are factors which point to improbable consideration of an oil severance-tax measure during a special legislative session which started April 30.

Gov. Henry Horner retained control of the general assembly from the start. Although he made no mention of the question of taxing the oil industry to pay the cost of increased old-age pensions, he warned it would be a "futile gesture" to the aged to "promise additional assistance without providing funds for its fulfillment."

Thus he left to the legislators themselves to provide the method for raising revenue to pay the increased costs.

The executive did not discuss a 3 per cent production-tax bill which had been prepared in advance of the session. Instead, he took an emphatic stand against consideration of an administration-sponsored measure at this time.

A poll of legislators conducted by press representatives shortly after the session convened disclosed Republicans pledged as a unit to oppose tax boosts, while Democratic members expressed distaste for voting additional increases on the ground such action will be detrimental to their respective candidacies during remaining months of the campaign.

One oil-tax measure was introduced as a "feeler" at the session. Rep. Paul Powell (Democrat), of Vienna, and Rep. Andy O'Neil (Democrat), of Springfield, presented a bill calling for a tax of 5 cents per barrel upon each barrel produced after July 1. The measure also provides a penalty of 1 cent per barrel for producers who fail to file monthly production reports.

LOUISIANA

AT A HEARING IN NEW ORLEANS on May 7, testimony regarding allocation, spacing, and production rulings for Cotton Valley and Sugar Creek, North Louisiana fields, was discussed before the Louisiana Department of Conservation. Conservation Commissioner E. A. Clements, who presided, invited B. A. Hardey, who was last week named by Gov.-Elect Sam Jones as the new commissioner, to attend the hearing.

NEW MEXICO

OIL CONSERVATION COMMISSION of New Mexico established allowable production in May at 107,000 bbl. a day. The Bureau of Mines estimated the demand in the state at 103,900 bbl.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

GASOLINE 10 CENTS

At many points in Oklahoma, Kansas, and Texas the motorist is confronted with signs, "Gasoline—10 cents."

Taking into consideration differences in transportation and tax costs, this price can be duplicated in many other parts of the country.

The product referred to is not usually the regular or premium grade but it occupies the most conspicuous position to catch the eye of the motorist.

This price in the three states includes the 4 cents state tax and the 1 cent federal tax, so that the sign should really read: "Gasoline—5 cents."

In many ways these signs symbolize what is wrong with the oil business marketwise.

A schoolboy economist knows that the price of 5 cents bears no relationship whatever to the cost of production and distribution. If crude oil could be used as motor fuel, it could not be sold profitably at filling stations for 5 cents a gallon.

Based on the usual contract, the modern filling station, with all its familiar services to motorists, is entitled to 3½ cents a gallon for retail distribution. The wholesale or jobber margin between the refinery and the filling station ranges from 1 to 2 cents.

Thus, the 5 cents retail price covers only the wholesale and retail marketing spread commonly given for the distribution of gasoline.

With this cost situation in mind, it is often asked: "Why do they do it?"

Briefly, it illustrates the fact that there are still hundreds of dealers engaged in the retail distribution of petroleum products who have no proper place in it.

Their merchandising policies (if they can be honored with such a term) are based entirely on cutting prices without regard for cost. They are found in all businesses, and these misfits considered as a group account in a large measure for the thousands of business failures reported every year.

Unfortunately, this is not the whole story. In numerous instances these alleged merchandisers are given financial support by refining and jobbing connections. It is the suppliers in many cases who are paying these losses through guaranteed margins, low rentals, loaned equipment and various other devices which keep station operators in business regardless of what they do.

Going back still farther, it should be apparent that the entire industry is holding the sack in these uneconomic operations which are partially a reflection of unbalanced operations in all branches of the industry.

Some of this 10-cent gasoline comes from natural-gasoline plants where the finished product is bringing at this time from 50 cents to 75 cents a barrel.

Again, there are refiners attempting to maintain higher prices for their regular and premium grades who dump the remaining material for whatever they can get. Then there are producers who insist upon getting more than their share of the total available market.

The net result is this 10-cent gasoline, which is a threat to all that is sound in the industry's operations.

It points to the stoppage of all research and development work which has been responsible for the amazing progress of the industry in all its fields of activity.

It means the closing of adequate support from stockholders who finance the expanding operations to meet the growing demands for petroleum products.

The oil industry with 10-cent gasoline is headed for the bargain basement.

B. A. Hardey New Louisiana Conservation Commissioner

By GEORGE WEBER

SHREVEPORT, La., May 6.—Gov.-elect Sam H. Jones of Louisiana has announced that Maj. B. A. Hardey, Shreveport independent producer, will be appointed commissioner of the Louisiana Department of Conservation. Major Hardey will accept the post temporarily to conduct a thorough study of the department and place it on an efficiency basis, after which a permanent commissioner will be named.

This marks the first appointment announced by the incoming administration, which succeeds the administration founded by the late Huey Long. It conforms with Governor-elect Jones's announced policy of drafting men who do not wish permanent political offices, but who are willing to carry out the reorganization necessary in placing important state departments on a more workable basis.

No personnel changes are contemplated by Mr. Hardey in the near future, since the study of the department's affairs and the drafting of possible necessary legislation will demand his full attention for some time following the inauguration on May 15.

The new commissioner has a varied and prominent background of oil-business experience. He was born October 19, 1893, in Evangeline Parish, Louisiana. After finishing his education at the University of Texas, where he played guard on the football team, he worked in various oil-production and drilling capacities until the war.

Following service as a captain in the coast artillery at Fort Monroe, he joined the Gulf Refining Co. January 1, 1920, where he remained in the scouting department for 5 years. In 1925 be became associated with the Thigpen-Herold interests, whose production extended through North Louisiana and East Texas.

Following the sale of many of the Thigpen-Herold properties to Moody Seagraves in 1929, Mr. Hardey joined the latter operator and developed the company's gas properties in the Hugoton field of western Kansas. He returned to Shreveport in 1931 and a year later became associated with Hobson Wheeless and others in the Sultana Oil & Drilling Co., where he remained until early in 1938, when he resigned to operate as an independent with offices in Shreveport. He is vice president of the Independent Petroleum Association of America and a member of the executive committee of the Arkansas-Louisiana division of the Mid-Continent Oil and Gas Association. He is a former president of the Shreveport Chamber of Commerce.

As conservation commissioner he will succeed E. S. Clements who will return to the state senate. Mr. Clements was appointed to the office less than a year ago to replace William G. Rankin who is serving a term in the federal penitentiary, having pleaded guilty to mail-fraud charges involving conservation department funds.

In announcing Mr. Hardey to the post, Governor-elect Jones said:

"One of the most abused departments of our entire state government has been the Conservation Department. Millions of dollars have been lost to landowners, as well as to the state. Hot-oil operations have become a public scandal. Oil fields have been shamefully depleted and great reserves have been permanently lost because unscientific operations were permitted.

"Because of the fear of a racketeering government, petroleum industries have been kept out of the state and producers have chosen instead to ship their oil to other states for refining rather than locate here and furnish employment to our own people.

B. A. HARDEY

"To correct these evils, I have selected an outstanding citizen to temporarily head the Conservation Commission in the person of Maj. B. A. Hardey of Shreveport. He knows the oil and gas business from the bottom up, having worked in almost every capacity in the industry from roughneck up. He is also familiar with the other divisions of the Conservation Commission and is highly recommended by the resident independent oil operators in Louisiana."

DEATHS

BARNEY EDWARDS, 60, oil operator and former city manager of Fort Worth, Tex., died last week in a Fort Worth hospital.

E. B. TACKETT, 69, Corsicana, Tex., died last week. A native of Alabama, he was an employe of Magnolia Petroleum Co. refinery for 20 years.

CHARLES H. JOHNSON, 58, executive vice president and director of Gisholt Machine Co., Madison, Wis., died April 23.

SHERIDAN HARLAN MARTIN, 60, a native of Wesley, Pa., died in Los Angeles April 22. A resident of California for over 47 years, he was one of California's pioneer oil operators and participated in the first development of the old Los Angeles, Whittier, Tar Creek, Santa Maria, McKittrick, Coalinga, and Kern River oil fields. A familiar figure in early development of the old Montebello and Huntington Beach fields, he was considered an authority on petroleum-production methods.

PAT DOUGHERTY, oil producer, died at Bolivar, N. Y., on April 30. He was a member of the Boston Red Sox world-champion baseball team in 1904 and the Chicago White Sox world champions in 1906.

Tide Water Associated and Pacific Western Deal

William F. Humphrey, president of Tide Water Associated Oil Co., reported to the stockholders at the annual meeting in New York that the company has executed agreements with Pacific Western Oil Corp. and George F. Getty, Inc., under which Tide Water Associated will operate all of the oil and gas producing properties of those companies in California under a fixed fee and direct-operating cost arrangement, and under separate agreements Pacific Western Oil Corp. and George F. Getty, Inc., will join with Tide Water Associated Oil Co. in a program for acquiring and developing prospective oil lands in California. Tide Water Associated will have a 75 per cent interest and each of the other companies will have a 12½ per cent interest in all properties acquired and will share in like proportions in the cost of geological, geophysical, and land-department charges of Tide Water Associated's western division. Operations and acquisitions of properties will be under the jurisdiction and management of Tide Water Associated.

Mr. Humphrey, referring to refinery operations, said:

"We hope the recent rapid increase in gasoline inventories due to the great demand for kerosene and heating oil may prove a valuable lesson to the industry. Probably modification of refinery facilities and their operation will result in more flexibility in operations and permit a better balance between the production of heating oil and gasoline and the demand for these products."

The company recently secured from Houdry Process Corp. a license to use the Houdry catalytic process at its Bayonne refinery.

THE MARKETS*

CRUDE OIL: Texas and Illinois were responsible for most of the 164,408-bbl. decline in average daily production in the United States last week. Texas produced 147,949 bbl. less oil and Illinois 14,440 bbl. less than in the previous week. Total production was 3,683,169 bbl. per day.

REFINERY: Grave position of gasoline market at the Gulf, accompanied by drop in prices, has increased uneasiness in interior areas. No clear sign of spring upturn yet in evidence. Further weakening of lubricating oils in the East, with sharp decline in quotations, caused another reduction in Mid-Continent prices, though in the latter area there apparently were few overheavy inventories. Kerosene and tractor fuels in brisk demand, and light fuels holding well. Natural gasoline extremely weak.

TANK-WAGON AND POSTED DEALER: Socony-Vacuum made a general cut of a half cent throughout New York and New England, except western New York. Standard of New Jersey reduced dealer tank-wagon gasoline prices 1.65 to 2.45 cents at points in North Carolina. Many cuts in tank-wagon prices of third-grade material in Standard of Indiana territory, but few in other grades. Standard of Kentucky made local adjustments at Florida points.

FINANCIAL: Moderate advances were made by the oil stocks, and some new highs for the year, based on encouraging earnings reports, were recorded. Average of 30 representative stocks for week ended May 4: High, 27.21; low, 26.08; close, 26.85. Week ended April 27: High, 26.92; low, 26.13; close, 26.52.

*Detailed information in market section.

ANNUAL REPORTS

		Net income	Earned per share
Socony-Vacuum	1939	$34,452,710	$1.10
	1938	40,106,917	1.29
Humble Oil & Ref.	1939	29,950,287	3.33
	1938	35,800,353	3.98

U. S. Chamber of Commerce For State Oil Regulation

By HENRY D. RALPH

WASHINGTON, D. C., May 6.—A resolution opposing federal regulation of the petroleum industry was adopted by the Chamber of Commerce of the United States in closing its twenty-eighth annual meeting here last week.

The resolution came after a series of meetings devoted to the theme that American industry can reach new heights of activity, prosperity and employment if freed from undue government interference and permitted to use its own initiative in developing new frontiers through scientific and market research.

At one of the sessions devoted to the relation of government to natural resources, George A. Hill, Jr., president, Houston Oil Co., defended state regulation and attacked the pending Cole bill for regulation of oil production as unnecessary. (The Oil and Gas Journal, May 2, Page 20.) At this same session Prof. Ralph J. Watkins, economic adviser of the Natural Resources Planning Board, attempted to make a case for the Cole bill by declaring that the federal Government alone has sufficient authority to bring about conservation in oil production. The outcome of this debate was the resolution adopted by the chamber the following day reading as follows:

Upholds State Regulation

Individual states have made pronounced progress in conserving their petroleum resources, and by interstate compacts they have taken action to meet problems of joint interest. The slowness of one or more states to cooperate fully in the compact movement, and instances of failure within states of proper application of conservation laws, should not be permitted to obscure the accomplishments of the states and their determination to solve the problem through their own efforts.

Centralization in the federal Government of control over petroleum production would interfere with the development of state measures, and with correlation of state action through interstate compacts to conserve this important natural resource in harmony with the principle of preserving state and local authority, responsibility, and initiative.

In defense of the Cole bill, Professor Watkins stated there should be no disagreement that the broad objective of social policy is conservation or wise use of natural resources. Raising the question of how this objective should be attained, Professor Watkins said:

"Let me hasten to say that it is not my purpose to build a case for federal regulation in all cases or for exclusive federal regulation in any case. I do contend that the federal Government—as the only agency representative of all of us—must assure itself that the objective of conservation of these energy resources is being attained; and I contend further that parts of that task can be accomplished only by that agency of government which has jurisdiction over our entire domain, i.e., the federal Government. To make these contentions is not to say that these industries themselves do not have vital roles to play in the fight for conservation and not to say that the governments of the producing states do not have vital roles to play.

"On the first contention, I cite two simple arguments: (1) That these resources supply the energy base without which our industrial civilization would topple and (2) that with the exception of water power, these resources are exhaustible resources, i.e., they will not last forever. In the face of these simple facts, it appears to me to be beyond argument that the only agency which represents us all—i.e., the federal Government—must do that which is necessary to see that the aim of conservation or wise use is attained.

"Why federal action in the petroleum industry? What part of the job of conservation of oil can be done only by the federal Government? A noncontroversial answer to that question is to say that only the federal Government can place restrictions on an importation of foreign oil; that only the federal Government can prevent the shipment in interstate commerce of hot oil, under the Connally Act; and that only the federal Government can validate an interstate compact."

An implied warning that government regulation may be the death knell of the oil industry was given the natural-resources section of the chamber by J. D. A. Morrow, president, Pittsburgh Coal Co. He declared the reason the coal industry is accused of being unprogressive and wasteful is the degree of government regulation which has been imposed upon it. "I say emphatically," Mr. Morrow declared, "that the miseries of coal are not of coal's own making but are the direct and inescapable consequences of unsound and destructive governmental policies that have been applied to this industry."

Suggested Program

Mr. Morrow made a plea for a sensible antitrust policy which would permit natural-resource producers to cooperate to promote conservation and sound business practices. He laid down a program in this field which would be equally applicable to the oil industry, although his remarks were directed particularly to the coal business.

Another oil man taking a prominent part in the chamber's convention was Col. T. H. Barton, president, Lion Oil Refining Co., El Dorado, Ark. In reporting on business conditions in the Southwest, Colonel Barton declared industrial research points the way to tremendous expansion of business, that the Southwest and particularly the oil industry is leading the way to progress through research. Using the oil industry as an example of business progress, Colonel Barton quoted at length from an article in The Oil and Gas Journal on "Price of Progress."

Chronology of the Madison Case

(Continued from Page 13)

and a jury. Prior to or during the trial, the indictments against the three trade journals and many of the oil companies and individuals were dismissed out of the case, leaving on trial 16 oil companies and 30 individuals. The trial ended on January 22, 1938, after 110 days, when the jury returned verdicts of guilty against all defendants remaining in the case.

On July 19, 1938, Judge Stone dismissed the indictments against 10 individuals and one company on the grounds of insufficient evidence and granted new trials to 15 individuals and three companies. Twelve companies and five individuals were fined an aggregate of $65,000 and announced an appeal would be entered.

In August 1938, the court set September 25 for new trials for the 15 individuals and three companies, but on September 15 the case was transferred to the federal District Court at Danville, Ill., before Judge Walter C. Lindley. It has since been postponed.

On September 23, 1938, Judge Stone refused to rescind his order dismissing the 11 defendants and the Department of Justice, on October 3, filed an appeal to the U. S. Circuit Court at Chicago.

On February 13, 1939, that court upheld Judge Stone and the Department of Justice appealed to the U. S. Supreme Court which on November 22, by a vote of 4 to 4, decided the case against the Government, upholding Judge Stone's right to dismiss the 11 defendants.

In July 1939, the Circuit Court of Appeals at Chicago reversed the conviction of the 12 companies and five individuals, and granted them new trials. From this action of the Circuit Court of Appeals, the case was appealed to the U. S. Supreme Court, and it was in this appeal that the Supreme Court today handed down the decision.

Jobber Case

The chronology of the jobber case which has not been tried is as follows:

December 22, 1936—Indictment filed in U. S. District Court for the Western District of Wisconsin against 23 oil companies and 46 of their officials and employes on three counts charging a series of agreements to fix and maintain limited gross margins allowed jobbers, adopt uniform jobber contracts, and adopt and maintain uniform policies with respect to dealing with jobbers.

June 2, 1938—Fourteen corporations (2 were merged making it 13) and 11 individuals entered pleas of nolo contendere on all three counts and were fined a total of $360,000 and assessed costs of $25,000. On the same day the Government moved to dismiss the case against 27 individuals.

August 12, 1939—Trial postponed indefinitely.

Pipe-Line Subjects Feature P.I.E.A. Dallas Meeting

By D. H. STORMONT

Upper left: Among those attending the meeting were L. R. Fitzgerald, Sinclair Refining Co., Fort Worth, Tex.; C. C. Sampson, Gulf Oil Corp., Houston, Tex.; W. B. Shakely, Sinclair Refining Co., Fort Worth, Tex., and retiring president D. W. Sims, Continental Pipe Line Co., Ponca City, Okla. Above: New officers of the association are O. V. Summers, Texas Pipe Line Co., Houston, Tex., president; C. O. Diller, Lone Star Gasoline Co., Dallas, Tex., vice president, and (standing) J. F. Collerain, Houston Pipe Line Co., Houston, Tex., reelected secretary-treasurer. Left: A. J. Balcom, Magnolia Pipe Line Co., Dallas, Tex., chairman of the convention arrangements committee

DALLAS, Tex.—With a program made up of both technical and lighter subjects of current interest, members of the Petroleum Industry Electrical Association met here May 1-3 in their annual meeting. Papers of technical nature were on the subjects of cathodic protection of pipe lines, private automatic communication systems and research in the electrical industry, each being delivered by authorities in that field. Of a less technical nature were discussions on safety and prevention of fires and explosions, the value of cooperation, and taxation of the petroleum industry. Over 300 oil-company employes whose work is in the electrical field, and representatives of electrical companies attended the 3-day session.

Highlight of the meeting was the address of Baird H. Markham, director of the American Petroleum Industries Committee, New York City, on "A Program of Education and Action." This presentation dealt mainly with the trend toward higher taxation of the petroleum industry and legislation designed to restrict and curb use of highways; how these affected the welfare of the industry and the motorist; and the work of the Industries Committee toward reducing taxation and combating the legislation. The problem, Mr. Markham said, basically is one of education.

Of the technical papers read before the group, that given by Gordon N. Scott, pipe-line technologist of Los Angeles, Calif., aroused most discussion from the floor. In the first portion of his talk he described several cathodic protection systems in use on California crude-oil and natural-gasoline lines. One recently completed system described was of unusual interest in that 600-watt, three-phase current was transmitted over existing telephone lines to corrosive spots on a 10-in. pipe line. For one of the cathodic installations the three-phase current was generated in a central generating plant and transmitted a distance of 8 miles, and at the second installation like current was transmitted a distance of 4 miles. At the corrosive points where the cathodic protective units were installed, the 600-watt, three-phase current was stepped down in one reduction by a rectifier with an overall efficiency exceeding 80 per cent.

In the second part of his presentation "Current-Density Relationships in Cathodic Protection" were discussed, centering mainly around a series of soil-potential tests made by the author under varying conditions and with different-size pipe lines. The tests were conducted primarily to test the validity and application of the formula by which the potential of the pipe with respect to the soil may be calculated, the formula being:

$$V = V_o + K \times i \times \rho \times \log x$$

Where:

V = potential of pipe with respect to soil
V_o = polarization potential
K = a constant
i = current density
ρ = soil resistivity
x = geometrical factor

Tests were made at varying distances from pipe lines under various conditions of corrosiveness on land and on the ocean bottom, and on size pipe varying from 2 in. to 11 ft. Results of the tests were presented in graphic form by slides.

In the Thursday morning session L. A. Hawkins, executive engineer for General Electric Co., Schenectady, N. Y., spoke on "Research in the Electrical Industry."

Following this presentation, G. M. Kintz, of the Bureau of Mines' Dallas office spoke on "Fire and Causes of Explosions—Means of Extinguishing and Prevention."

In the afternoon meeting of Wednesday, Carl Young, secretary of the division of production of the American Petroleum Institute, pointed out "the dividends from cooperation." Young described the organization of the production division of the A.P.I. and how the work of the various committees and groups is carried on, pointing out that the Institute's standardization program was an interesting example of cooperative effort.

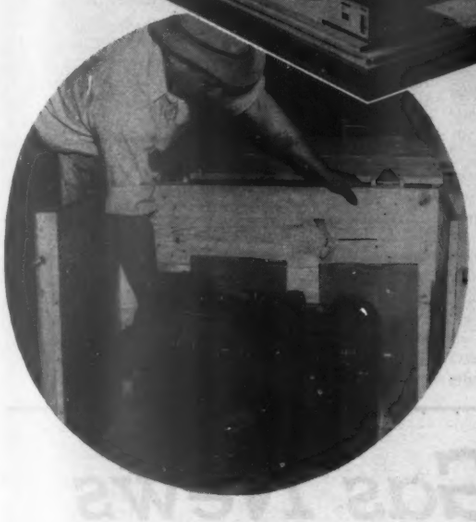
Previous to Mr. Young's talk, C. F. Ffolliott, technical director for Associated Electrical Laboratories, Chicago, gave a resume of the history of the telephone and described the developments and application of private automatic systems. Different types of automatic systems of communication were described and demonstrated, as well as switching apparatus and watchman alarm systems.

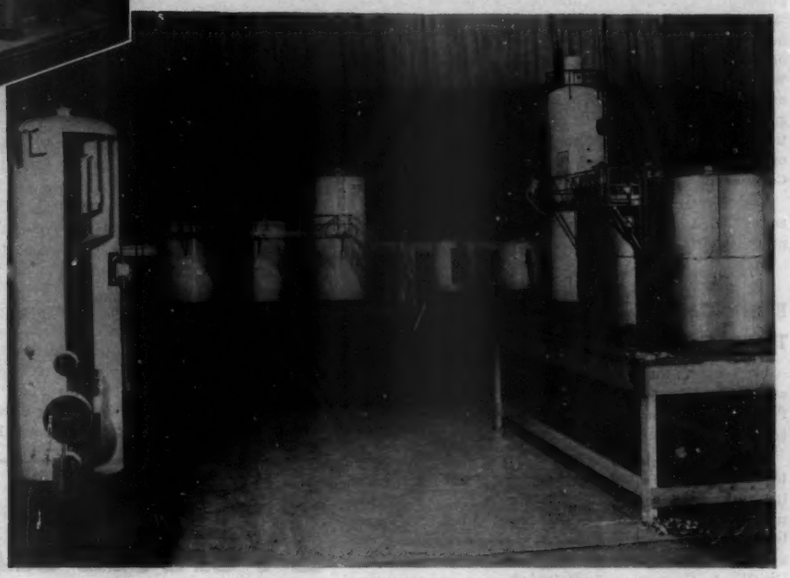
The electrical group selected Tulsa as the convention city of 1941, with a meeting to be held at the Mayo Hotel in the latter part of April. F. P. O'Conner, superintendent of the telegraph department of Stanolind Oil & Gas Co., was elected chairman of the convention arrangements committee. P.I.E.A. officers elected were: President, O. V. Summers, of Texas Pipe Line Co., Houston; C. O. Diller, of Lone Star Gasoline Co., Dallas, vice president; and F. F. Collerain, of Houston Pipe Line Co., Houston, relected secretary-treasurer.

The Petroleum Electric Supply Association in their general meeting elected J. H. Jamison, of the Square D Co., Houston, as president for the coming year. Other officers elected by the supply groups were: Claude Heiser, Anaconda Wire & Cable Co., vice president; and G. T. Brundrett, of Hubbard & Co., secretary-treasurer.

Hall of Science

Preens for the International Petroleum Exposition at Tulsa





Top: Model natural-gasoline plant being set in place in the Hall of Science. The model is 6 by 12 ft. and is made to scale showing actual operations of natural-gasoline manufacture. Left: Unpacking the glass pump, which is constructed to show how the modern pumping unit works. It is made of Pyrex glass. Right: Exhibit of producing-lease surface equipment. The exposition opens May 18 and runs until May 25

AMONG the $15,000,000 worth of exhibits at the eleventh International Petroleum Exposition, to open May 18 on the exposition's 25-acre grounds in Tulsa, those in the Hall of Science will command high interest.

The Hall of Science, which was added to the exposition's features in 1938, is already too small to take care of exhibitors asking for space, and it has been enlarged to accommodate the overflow. Also a motion-picture projection room, 30 by 30 ft., has been added.

The geological and geophysical displays are likely to be the first to engage the visitor's attention. A swamp buggy, used in exploration of marshy areas, will be on exhibition for the first time at the oil show. Complete apparatus to demonstrate the process of seismograph exploration will be shown. The gamma ray, by which a photographic reproduction of the strata in a drilled hole is obtained, will attract interest.

Aerial photographs and how they are used in geological mapping of surface formations and in working out structural geology will have a place of prominence in the Hall of Science.

The geological exhibit is in the hands of Dr. B. B. Weatherby and a committee of Tulsa geologists. Charts, cross-sections, and maps will show structures and formations from various oil-producing regions of the United States. Cores from oil-producing formations, including some of the deepest wells ever drilled in central California, will indicate recovery values.

An exhibit, in charge of Glenn Ruby, head of the Argentina Geological Survey, will show salient facts about the country's oil resources.

In the production department visitors will see the advances that have been made in increasing production from limestone and sandy-lime formations through the use of acid.

A complete working model of a cable-tool rig will be seen operated by compressed air, along with a working model of a spudder 11 ft. high and 6 ft. long.

An exhibit certain to stir interest will be a christmas tree made of glass, in operation on a flowing well, with a gas-operated pump, gas separator, manifold showing lines to other wells, and related equipment.

In the transportation division the newest streamlined models of tank trucks for hauling gasoline, fuel oil, crude oil, and kerosene will be shown.

How high-grade lubricating oils are made from Mid-Continent and other crudes through utilization of a chlorex solvent will be shown in the refining department.

Return bends for use in high-pressure stills will be displayed, together with early types of bends. A new gas detector and fluorscope for detection of gas and oil in drilling fluids will be of interest.

Among other exhibits in the refining department will be a static model of a natural-gasoline plant, types of separators and their operation, a miniature desalting plant, old and new types of lubricators, and illustrations of interesting refinery installations. Use of bottled gas for heating and cooking will be demonstrated.

Indicative of improved methods in the distribution of oil products will be an old-time riveted tank wagon, borrowed for the Hall of Science in the marketing department, and displayed close to the streamlined tank trucks. A life-size papier-mache horse will be hitched to the early-day wagon.

In the department of laboratory testing the U. S. Bureau of Mines will have a display significant of the lines of research which the bureau carries on for the benefit of the oil industry. Special properties of natural gas will be shown.

The oil industry has been among leaders in safety work, and one exhibit in the safety department will be a model modern derrick with latest protective devices.

In the department of related exhibits the $10,000 Link trainer used in the training of pilots for blind flying will be a center of interest. The machine will be under the supervision of an expert operator.

NEXT WEEK

COMPLETE DIRECTORY OF EXHIBITS AND EXHIBITORS

The May 16th issue will be the first of two special issues of The Oil and Gas Journal featuring the International Petroleum Exposition to be held in Tulsa, May 18-25. The first issue will include a directory and plat of booths of more than 450 exhibitors at the world's largest industrial show giving location; personnel in attendance and description of each exhibit. It will include the detailed day to day program and several other features of the exposition which will be the largest and most complete ever held.

Refinery Expansion

Cooperatives Refinery Is Dedicated in Kansas

PHILLIPSBURG, Kans., May 4.—The new 3,000-bbl. plant of the Cooperative Refinery Association, a subsidiary of Consumers Cooperative Association, with headquarters here, was dedicated today in the presence of a large crowd. Ralph Snyder, president of the Wichita Bank for Cooperatives, delivered an address, at the close of which he poured a bottle of high-octane gasoline from the new refinery into an old horse-drawn tankwagon used to deliver refined fuels by the cooperative at Kirwin, Kans., in 1906. Howard A. Cowden, president of the refinery association, presided.

The refinery, which began operations January 1, is connected to fields in three nearby counties by a 70-mile gathering line.

British Columbia's Attempt To Fix Gasoline Prices

VICTORIA, B. C.—A difficult situation has arisen as a result of efforts of the British Columbia Coal and Petroleum Products Board to enforce a reduction of 3 cents a gallon in the retail price of gasoline.

Litigation has been in progress for some time testing the right of British Columbia to control retail gasoline prices. Recently the Supreme Court of Canada upheld the validity of the provincial "Coal and Petroleum Products Act," passed in 1937; whereupon the government proceeded to enforce an order, issued by Dr. W. A. Carrothers, functioning as a one-man control board, under which the price of standard gasoline in Vancouver was reduced from 27 to 24 cents per imperial gallon, with corresponding reductions in other grades and localities. The reduced price was to include the 7-cent provincial tax.

Petroleum Industries of British Columbia, representing British American Oil Co., B. C. Fuel Co., Home Oil Distributors, Imperial Oil, Shell Oil Co. of British Columbia, Signal Oil Co., Standard Oil of British Columbia, McColl-Frontenac Oil Co. and Union Oil Co. of Canada, announced that the companies had suspended gasoline deliveries to dealers, pending representations to the provincial government that the price reductions ordered involved the sale of gasoline below actual cost. It was stated that dealers' stocks were ample to meet ordinary demands for some time and that exceptions would be made in case of emergency.

Many service stations in various parts of the province were speedily sold out and others limited sales to 1 or 2 gal. to each customer. A proposal by the oil companies to continue sales at the old prices for 1 week pending negotiations with the control board was rejected by the government; though Dr. W. A. Carrothers, chairman of the board, agreed to meet the company representatives. Two Vancouver garages secured interim court orders requiring deliveries of 2,600 gal. a day.

At Calgary it was stated that owing to freight rates and loading and unloading charges, it would be impossible to deliver Turner Valley gasoline to British Columbia points to retail at the lower price.

A special 1-day session of the British Columbia legislature has been summoned to enact additional legislation governing the gasoline industry. Meanwhile, writs have been issued by the attorney general's department against the nine distributing companies, charging them with operating a combine; and a request for an investigation under the Federal Combines Investigation Act has been dispatched to Ottawa. Mayor Lyle Telford is seeking an amendment to the Vancouver charter to permit the city to engage in the gasoline business, and steps may be initiated by the provincial government to operate gasoline production and distribution as a provincially owned public utility.

Meanwhile tank trucks of gasoline began rolling into Vancouver from Seattle, Wash. Mayor Telford arranged with independent dealers in Washington to supply up to 50,000 gal. of fuel a day to the city which in turn will distribute it to retailers whose pumps have been dry for nearly a week.

Petroleum Refiners Credit Program at Toronto

Credit executives of the petroleum refiners industry will hold a 2-day meeting at the Royal York Hotel, Toronto, Ont., on May 21 and 22 in conjunction with the forty-fifth annual credit congress of the National Association of Credit Men.

The program has been prepared under the cochairmanship of H. E. Butcher, Cities Service Oil Co., Chicago, and William Stockton, Atlantic Refining Co., Philadelphia, Pa.

R. A. Price, Cities Service Oil Co., Ltd., Toronto, Ont., will speak on "Constructive Credit Department Assistance to Customers," while "The Canadian Foreign Exchange Control Board" will be presented by M. P. McIndoo, Sun Oil Co., Ltd., Toronto, Ont. A number of open-forum discussions are planned, including "Cash Discounts and the Robinson-Patman Act," "Credit Problems Arising From Transport Deliveries to Dealers," "Report of Progress on St. Louis Plan," "Methods of Reducing Old Accounts While Selling Currently," "Controlling Credit Violations," and "Fuel Oil Credit Problems—(*a*) Degree-Day System, (*b*) Route System."

There will be a luncheon at 12:30 p.m. on Tuesday, May 21.

Atlantic Refining Honored By Franklin Institute

PHILADELPHIA, Pa.—Tribute was paid here to Atlantic Refining Co. at a dinner served to nearly 500 by the Franklin Institute. Contributions of the company in pioneering several oil-industry developments were cited by Philip Clayton Staples, president of the institute.

The citation was accepted by Robert H. Colley, president of the company, from Dr. Henry Butler Allen, secretary of the institute. Thomas A. Boyd, director of fuel laboratories, General Motors Corp., and Dr. Thomas A. Delbridge, manager of research and development for Atlantic, reviewed the steady progress in the art of producing superior gasoline and how this had enabled automotive engineers to build better cars.

●

Says Regulation Has Failed

WASHINGTON, D. C.—Asserting that "regulation has failed; under the hypnotic guise of the magic word 'conservation,' the large oil producers, with the aid of the federal Government, have been able to strengthen their semimonopolistic control by the passage of the Connally Act," Rep. John M. Coffee, of Washington, charged at a luncheon of the People's Lobby, that "the monopolies of natural resources have a death grip on American industry."

Natural-Gas News

Natural-Gas Investigation Before Senate Committee

WASHINGTON, D. C., May 6.—Resuming hearings last week on the Nye resolution proposing an investigation of possible monopoly in the natural-gas industry, a Senate judiciary subcommittee heard a former assistant attorney general deny he had favored Columbia Gas & Electric Corp. while with the Department of Justice.

William Stanley, who formed a law partnership with former Atty. Gen. Homer S. Cummings after resigning from the department in 1935, also branded as untrue charges that he had offered to bribe Robert W. Woolley, who headed a stockholders committee for Missouri-Kansas Pipe Line Co., into being "friendly" to Columbia Gas interests.

The committee is hearing witnesses on the struggle between Columbia Gas and Missouri-Kansas for control of Panhandle Eastern Pipe Line Co. and the proposed consent decree, still before a federal court in Delaware, entered into by the Department of Justice and Columbia Gas. Missouri-Kansas had denied the decree would carry out the department's claim of removing Columbia Gas from control of Panhandle Eastern.

Congressman John D. Dingell of Michigan, commenting on the high prices charged to the city of Detroit for its natural gas, asked the committee to recommend an investigation. The committee will reconvene as soon as all parties have had an opportunity to read a statement filed by the representatives of Columbia Gas.

Hugoton Gas Proration System Is Upheld by Court

TOPEKA, Kans., May 7.—The state Corporation Commission won an important victory Saturday in its efforts to establish a proration system for the vast Hugoton gas field in southwestern Kansas.

The state Supreme Court held that a stay order granted by Stephens County District Court against operation of the proposed system was "prematurely and improvidently" issued. The order was issued March 16 upon application of 182 land and royalty owners who contended the commission's action would damage them.

The Supreme Court did not rule on the constitutionality of proration procedure itself but its decision authorized the state agency to proceed with fixing allowables for the field.

Originally, the proration order was to take effect April 1 but this was stopped by the District Court suit. The commission has taken evidence on market demand in the field but has not set up a schedule of allowables.

In appealing to the Supreme Court, commission attorneys had argued that the state order was a restraint on functions designated to the state body by the legislature.

The Hugoton district extends south into Texas County, the Oklahoma Panhandle, and it was brought out in previous litigation that unless some companies were granted relief on the Kansas side, they would be forced to move operations into Oklahoma.

Probably as a result of the proration order, Republic Natural Gas Co. recently acquired additional leaseholds in Oklahoma and is drilling several wells. The Oklahome statute permits production up to 25 per cent of a well's potential capacity.

Lethbridge Franchise Vote

LETHBRIDGE, Alta.—The burgesses of Lethbridge will vote on May 29 on the granting of a franchise to Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary. The company has for some years been operating without a formal franchise.

A.G.E.M. Convention

The annual convention of the Association of Gas Appliance and Equipment Manufacturers will be held at the French Lick Springs Hotel in French Lick, Ind., May 20 through May 22.

Canadian Western Gas Meeting

LETHBRIDGE, Alta.—At the annual district meeting of the Canadian Western Natural Gas, Light, Heat & Power Co. here, J. J. Morrison, district superintendent, presided, and papers were given on "Cathodic Protection

of Steel Pipe Lines" by R. H. Nicholson of Calgary; "New-Type Oven Controls and Certified Performance Ranges" by Stewart Neil of Calgary; and "Barrett Pipe-Line Coatings," by F. W. Paterson of Lethbridge. Demonstrations of pipe-line coatings and installation of servicing furnace burners and automatic equipment and a forum of office work and routine followed. At the evening banquet, D. K. Yorath discussed group sickness and accident coverage.

Vermilion Gas Line

VERMILION, Alta.—Plans are being made by Franco Public Service, Ltd., subsidiary of Franco Oils, for the delivery of natural gas this year to the town of Vermilion from the Vermilion-Battleview field. Work on the local distribution system will be commenced in July, and the laying of 13 miles of transmission line undertaken later, with delivery of gas expected by October 1. Frank P. Fisher and H. R. Davis, of Buffalo, will have charge of the work.

Natural Gasoline

California Natural-Gasoline Plant Operations

California natural-gasoline plant operations in March were as follows:

San Joaquin Valley—	Gas treated (thou. cu. ft.)	Natural gasoline produced (gal.)
Belridge	4,012,197	2,187,484
Elk Hills	107,859	128,813
Kettleman Hills	7,632,724	10,522,759
Midway-Sunset	915,310	1,773,352
Mountain View	299,192	368,681
Miscellaneous	1,312,252	658,754
Coastal district—		
Elwood	365,572	463,720
Rincon	151,355	207,966
Santa Maria	145,712	435,760
Ventura Avenue	3,682,489	5,232,685
Miscellaneous	491,465	477,260
Los Angeles Basin—		
Brea-Olinda-Coyote	489,584	1,420,440
Dominguez	1,334,439	2,120,619
El Segundo	40,136	123,085
Huntington Beach	795,438	2,769,131
Inglewood	262,651	353,277
Long Beach	2,467,659	7,555,774
Montebello	2,733,656	1,614,122
Richfield	299,474	610,628
Rosecrans	999,489	1,205,046
Santa Fe Springs	1,379,504	4,796,996
Seal Beach	345,851	589,257
Torrance	292,241	906,604
Miscellaneous	1,230,638	2,226,023
Total (all fields)	31,786,887	48,753,245

DISTRIBUTION

	(Gallons)	(Gallons)
Stocks beginning of month	3,455,487	
Production during month	48,753,245	
Delivered to refineries		47,723,938
Delivered to jobbers, brokers, or blenders		1,394,315
Blended at plants for production of motor fuel		556
Losses		57,219
Stocks end of month		3,032,704
Total	52,208,732	52,208,732

	Gallons	Barrels
Liquefied petroleum-gas production	4,319,082	102,835
Motor-fuel production	4,505	107

DISTRIBUTION OF LIQUEFIED PETROLEUM GASES—MARCH 1940

(Thousands of gallons)

Number of producing companies	14	
Stocks beginning of month		2,040
Production during month:		
At natural-gasoline plants	4,319	
At refineries from natural gasoline	1,818	
At refineries from cracked gasoline	1,643	
Total production		7,780
Total		9,820
Total demand		7,620
Losses		48
Stocks end of month		2,152
Total		9,820

C.N.G.A. June Frolic

With Harry Fiske of Ingersoll-Rand as chairman of the entertainment committee, plans for the 1940 June frolic of the California Natural Gasoline Association, Saturday, June 8, at the Riviera Country Club, Santa Monica, Calif., have been completed.

Pipe-Line Activity

Tractor with angle dozer getting out of quicksand during construction of Southeastern Pipe Line by Williams Brothers Corp., now being carried on in Georgia

Reports Pipe Lines Benefit Public Without Government Aid

Commissioner Joseph B. Eastman, chairman of the Interstate Commerce Commission and former federal coordinator of transportation, in a report on "Public Aids to Transportation," says: "Oil and gas pipe lines occupy a unique position in American transportation history because they virtually are the only form of transportation which has paid its own way, in entirety, throughout 75 years, without benefit of public aid, and at the same time have contributed largely to reduction in prices of petroleum products.

"The public aids given the pipe-line industry are negligible," the report states. "A very specialized form of transportation, it has played a part in bringing down the prices of petroleum products and natural gas. The industry has prospered without public aid or the expenditure of public funds. In these respects it is largely unique."

Texas Pipe-Line Decision Favors the Companies

AUSTIN, Tex.—The Supreme Court upheld, by refusing a writ of error, a Court of Civil Appeals construction of the franchise-tax law which will result in oil pipe lines paying a smaller tax than that demanded by the state.

Refusal to grant a review left as the final law a holding of the Austin Court of Civil Appeals that pipeline companies gathering oil in Texas and other states and transporting it across this state to tidewater for shipment elsewhere are subject to a franchise tax based on Texas income and appertaining investment items, and not on their entire income and whole invested outlay.

The decision was in the contest by Atlantic Refining Co. of a demand made by Edward Clark, former secretary of state, on January 6, 1937. The ruling will give Atlantic a refund of $9,246 with interest since payment of the tax under protest to avoid penalties. As against the large sum remitted under protest from 1933 to 1936, the company tendered in payment of its franchise tax $17.94 in 1933, $10 each year in 1934 and 1935 and $13.10 in 1936.

Figures of income cited by the company were that in 1934 its gross receipts totaled $7,070,084, of which $7,031,775 was from interstate commerce, leaving but $38,308 intrastate income which formed the principal basis of the tax paid that year. Other years showed somewhat similar proportions.

Gulf Completes Lateral in Centralia Townsite

Gulf Refining Co., Tulsa pipe-line division, is commencing this week to move oil eastward from Illinois. A 9-mile 6-in. lateral has just been constructed on a contract let to Jones & Brooks, Inc., Oklahoma City, between the main trunk line and the company's properties in the Centralia townsite pool. A pumping station has been built at Centralia which is equipped with two 100-hp. gas engines driving reciprocating pumps. The line has been built to handle only the company's production from the Devonian and shallow formations. At present this does not exceed 2,000 bbl. The capacity of the line is between 15,000 to 16,000 bbl. The main trunk line transports oil from Mid-Continent points to a terminal at Dublin, Ind.; from there it is delivered through pipe lines to refineries.

At Dublin, Ind., the line branches in the form of a Y; one branch of it goes to Lima, Ohio, where deliveries are made to the Buckeye Pipe Line Co. which moves oil to the Gulf refineries at Toledo, Ohio, and Pittsburgh, Pa.; another branch goes to the Gulf refinery at Cincinnati, Ohio.

Oklahoma Utilities to Lay Line in Stroud Area

Construction of a 16-mile natural-gas pipe line from the Arlington field, 10 miles south of Stroud, Okla., to connect with the system of the Oklahoma Utilities Co. in the Bigpond area will start as soon as material arrives. Mike Foreman has contract for building the line. Contracts had been made with Shell Oil Co., Inc., and the Allied Materials Corp. for natural gas. The company also owns leases in the area which may be drilled.

Canadian Pipe-Line Ruling

CALGARY, Alta.—G. M. Blackstock, chairman of the Alberta Public Utilities Commission, has ruled that the Valley Pipe Line Co., subsidiary of Royalite Oil Co., is not required to commence immediate construction of a pipe line connecting the Lion refinery at Calgary with the main trunk line from Turner Valley.

Announce Winners of Awards in Safety Contest Sponsored by Exposition

THE 12 individual prize winners in the safety contest sponsored by the 1940 International Petroleum Exposition have been named, according to an announcement by H. W. Boggess, chairman of the central safety committee. The winners will be awarded gold engraved watches at the safety banquet to be held at Hotel Tulsa, May 23, during the exposition.

An accumulation of 3,936,454 man-hours of work without accident is recorded under the supervision of the four winning foremen and supervisors, one representing each main division: production, pipe-line, refining, and marketing.

A total of 4,781,646 miles driven without an accident is the accumulated record of the eight winners in the drivers' competitions, representing truck and passenger-car drivers from each of the four main branches.

More than 50 parchment certificates will be awarded other outstanding records just short of winners.

The Winners and How They Won

With a record of 395,621 accident-free miles driven, Roy E. Lindsay, Phillips Petroleum Co., Jefferson City, Mo., was winner of first place in the pipe-line division of the truck drivers' contest.

Mr. Lindsay entered the service of the Phillips Petroleum Co., October 1, 1929, and has been driving a truck since August 1931. This record covers 8½ years of driving, all on large transport trucks, making regular scheduled runs, a large portion being night driving.

Thomas C. Head, foreman, production department, Sinclair Prairie Oil Co., accumulated 642,796 hours without any employe receiving a disabling injury.

Since October 1922, Mr. Head has worked in the Burbank district, Oklahoma, under Supt. J. W. Stoker and was made a supervisor early in 1926. He is a World War veteran, serving 2 years in the U. S. Navy.

Perry Whiting, division superintendent, fire and water division, Continental Oil Co.'s Ponca City, Okla., refinery, supervised 43 employes to a total of 730,068 hours without an accident.

Included in the duties of Whiting's division are provision, care and operation of fire protection and fighting equipment, refinery water production and distribution, issuing of fire permits, sanitation inspection, escorting visitors through the refinery and prevention of waste. Employes carrying out these duties find it necessary to visit every point in the refinery at regular intervals and in case of fire are in the front line of hazardous exposure.

A native Oklahoman, Mr. Whiting entered the service of Continental (then Mariand) Oil Co., April 1, 1924.

George G. Duff, meter and gas man, fuel department, Continental Oil Co. refinery, Ponca City, Okla., has operated passenger cars in line of duty a total of 397,128 miles without an accident in the passenger car drivers' contest.

Mr. Duff was employed by the Mariand Oil Co. in April, 1919, and has used a car in his work since that time.

The majority of the driving done by Duff consists of short drives, necessitating much stopping, starting, backing up and turning around in close quarters and, according to Duff, requires the continual practice of defensive driving.

Harold Vernon, gas-meter supervisor, Oklahoma Natural Gas Co., Tulsa, has driven a total accumulated mileage of 707,604 miles without an accident.

Mr. Vernon entered the service of the Oklahoma Natural in July 1917, at which time this record was started. He has not had an accident during the more than 21 years of service with the company.

THE WINNERS

Left Row: (Top to bottom) Roy E. Lindsay, Thomas C. Head, Perry Whiting, George G. Duff, Harold Vernon and Ben W. Steincamp. Right row: (Top to bottom) W. F. Hird, A. T. McKinney, Ralph L. Shipp, L. C. Feray, Leroy Thomas and A. W. Kammeyer

Ben W. Steincamp, district superintendent of the Shell Oil Co., Inc., Wichita Falls, Tex., has in the past 24 years driven automobiles in company service a total of 862,690 miles without an accident.

Mr. Steincamp entered Shell service in February 1917 at Yale, Okla., and has since represented that company at Ingalls, Depew, Deep Fork, Cromwell, Holdenville, Wetumka, Seminole, Earlsboro, Oklahoma City, Okla., Oxford and McPherson, Kans., and Pampa, Tex., running the gamut from roustabout to his present title before landing in Wichita Falls in 1937.

W. F. Hird, division manager, Continental Oil Co., Lincoln sales division, Lincoln, Neb., won first place in the supervisors' marketing-division contest. With 199 employes under his direct supervision, they have worked a total accumulation of 1,504,638 accident-free hours in a 3½-year period ended December 31, 1939.

Mr. Hird first entered the service of the Continental as station agent in Roswell, N. M., in 1908. He served as a recruiting officer in the U. S. Army during the Mexican border trouble and as gunnery and firing instructor during the World War. He was given command of Battery C of the Army artillery of the First Army and on July 10, 1917, fired the first shot of that regiment at Chateau Thierry. Receiving the rank of captain late in 1917 he is affectionately known as "Cap" by all his associates.

A. T. McKinney, salesman, Ohio Oil Co., Robinson, Ill., has driven a total of 633,000 miles without an accident to receive first place in the passenger-car drivers' contest, marketing division.

Mr. McKinney entered the service of the Ohio Oil Co., traveling the State of Illinois in 1924 and during the time since then has never been involved in an automobile accident.

Ralph L. Shipp, chief engineer, Lone Star Gas Co., Petrolia, Tex., was declared the winner in the pipe-line division of the supervisors' contest. In 8½ years his force of 50 men has worked a total of 1,058,952 hours without an accident.

Such a record deserving reward, the Lone Star presented Mr. Shipp a bronze plaque in May 1939, when a million accident-free hours was reached, this being the first unit to complete such a record for that company.

Entering the employ of Lone Star in 1914, Mr. Shipp worked on the construction of the Petrolia station where he is now "Chief" to all his employes. He literally grew up in the gas business. Born near Johnstown, Ohio, he spent one of his boyhood vacations pipe-lining for the E. H. Everts Gas Co., of Newark, Ohio. In 1909, at 16 years of age, he got a job in the Johnstown compressor plant of the Columbus Natural Gas Co.

L. C. Feray, bus and truck driver for Shell Oil Co., Inc.'s Deer Creek refinery, Houston, Tex., has been declared winner in the truck-drivers refining-division contest, driving a total of 355,000 miles without an accident.

Mr. Feray has been driving a truck or bus for 17 years and besides his safe-driving record he has completed 58 hours of solo flight and has an amateur pilot's license.

LeRoy Thomas, Tide Water Associated Oil Co., Tulsa, won first place in the production division of the truck drivers' contest with 746,148 miles driven without an accident. Practicing his belief that "There is no such thing as right-of-way," Mr. Thomas has recorded 13 years of safe driving.

During the World War, Mr. Thomas saw service with the Thirty-first Infantry in Siberia and the Philippine Islands. It was while in Siberia with temperatures as low as 45 to 50° below zero that Mr. Thomas started driving trucks, army supply trucks. This training is possibly showing its effect in his record driving.

Observing the maxim of Stop! Live! and Let Live! A. W. Kammeyer, truck driver for the Standard Oil Co. of Indiana, Concordia, Mo., accumulated 684,455 accident-free-miles in 18½ years. Building this outstanding record has not been without a struggle for all kinds of weather and road conditions have been encountered.

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Louisville Gas and Electric Co.
Monsanto Chemicals, Limited
Northern Natural Gas Co.
N. V. De Bataafsche Petroleum Maatschappif
Phillips Petroleum Co.
Procter and Gamble Co.
Producers Gas Co.
Societe Anonyme des Petroles Jupiter
Socony-Vacuum Oil Company
South Penn Oil Company
Standard Oil Company of California
Standard Oil Company of Indiana
Standard Oil Company of Louisiana
Standard Oil Company of New Jersey
Sun Oil Co.
Tide Water Associated Oil Co.
Tri-Ess Corporation
United Fuel Gas Co.

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- *industrial and domestic consumption*
- *preventing diffusion of sour gas into sweet gas sands*
- *repressuring sweet oil fields*
- *manufacture of carbon black*
- *production of blending agents for high-test motor fuels*
- *gas engine fuel*
- *camp cooking and heating*
- *water well lift pumping*

Purification and dehydration of natural gas to prevent corrosion and hydrate formation in transmission lines and equipment.

Purification of refinery and casinghead gas for—
- *feed stock to polymerization and alkylation plants*
- *recovery of sweet propane and butane fractions*
- *reduction of corrosion in lines and processing equipment*
- *synthesis of iso-octane*
- *synthesis of hydrogen*
- *synthesis of industrial chemicals*

Purification of gas from sewage disposal plants.

Recovery of H_2S for sulphuric acid and chemical manufacture.

Removal of CO_2 from raw hydrogen.

Production of inert atmospheres from combustion gases.

Recovery of CO_2 for—
- *production of liquid CO_2*
- *production of dry ice*
- *use in mining of bituminous coal*
- *manufacture of salicylic acid and aspirin*

International

Mexico . .

Will Not Arbitrate But Promises to Pay

MEXICO will not arbitrate the dispute over expropriation of American-owned oil properties but intends to make payment for the properties as soon as the compensation is determined by the Mexican courts or through private negotiation with the companies, it is stated in a note from Gen. Eduardo Hay, Mexican minister for foreign relations, made public by the State Department at Washington.

The note was in answer to a note transmitted to the Mexican Government by Secretary of State Hull on April 3 asking Mexico to submit to international arbitration the question of payment for the expropriated oil properties and a number of other claims of this Government against Mexico. The Mexican answer goes into considerable detail in stating legal reasons why that government cannot arbitrate this matter, the principal reason being that it feels the oil expropriation is a matter of domestic character which may be decided by its local courts.

The note confirms a report that the Mexican Government has reached an agreement with the Sinclair group of companies formerly operating in Mexico under which the expropriation is accepted and indemnity is to be paid in installments. The Mexican Government states it is ready to negotiate similar settlements with other American companies. The agreement was understood in Washington to provide for payment of between $8,000,000 to $12,000,000 over a period of years to be supplemented by the delivery of "several million" barrels of oil for which disposal already has been arranged.

Delay in making compensation is blamed on the oil companies, and the note declares the attitude of the companies is responsible for the delay in settling other controversies pending between Mexico and the United States.

Venezuela . .

New Field Indicated in Eastern Venezuela

MORE tangible indication that a new producing field has been opened in eastern Venezuela was given last week when Texas Co. of Venezuela, Ltd., announced that its No. 1 Los Caritos in the district of Sotillo, State of Monagas, east of the Temblador field, has been completed for initial production of 400 bbl. per day. The well produced 30° A.P.I. crude at the initial rate of 400 bbl. daily after the hole had been plugged back to 5,829 ft. The well was originally carried to total depth of 7,098 ft.

Location has been made about 1 km. north of the discovery well for No. 2 Caritos and rig will be moved from the producer to carry out further exploration. The second location, as shown by the accompanying sketch, is only a short distance removed from the boundary of Standard Oil Co. of Venezuela 10-in. pipe-line terminal on the Rio Uracao (Cano Manamo) which serves the Temblador field.

Virtual assurance that the Texas Co. of Venezuela had succeeded in discovering a new field on the eastern extension of the Temblador fault was given several weeks ago on the basis of information on drill-stem tests made at various intervals down to the final total depth. Showings of oil were confirmed but definite announcement of the completion for 400 bbl. per day, recorded on March 20, was not made until last week.

Antilles . .

Major Exploration Play Is Rumored

RUMORS are current that an exploration transaction of major proportions, covering privately and jointly held concessions in the Antillean chain of islands, is under consideration. Negotiations are not sufficiently advanced to disclose any of the considerations or even to give assurance they will be carried to conclusion. However, one of the large international interests is involved in the negotiations. If they are completed it probably would mean eventual widespread exploration and development in Santo Domingo, Haiti, and other islands of the Antillean chain, perhaps excluding Cuba.

Egypt . .

Output 200 Per Cent Greater Than in 1928

EGYPTIAN crude-oil production for December has been reported through the Department of Commerce at 446,849 bbl., raising the 1939 total-output figure to 4,723,916 bbl., a gain of 3,102,056 bbl., or nearly 200 per cent over 1938.

The December production figure of 446,849 bbl. was surpassed by only one other month during 1939 and that was in August when output was reported to have been 449,992 bbl. However, the daily average yield of 14,415 bbl. during December was slightly less than in November, when the daily output amounted to 14,812 bbl.

Turkey . .

Discovery of Oil Reported at Besiri

DISCOVERY of oil in Turkey east of Diyarbakir at Besiri was reported last week by the American consul at Ankara in a wire to Secretary of State Hull. An American employed by the Turkish Petroleum Institute confirmed the report. No other details were contained in the message.

The Turkish Government has been active for several years attempting to develop a national oil reserve. During recent years American engineers have directed the exploration operations, using modern rotary equipment from this country. Several showings of oil have been reported from time to time.

England . .

Motor-Car Registrations Reduced Over 30 Per Cent

IN a report before Parliament, the British chancellor of the exchequer revealed that January motor licenses issued in Great Britain indicated that more than 30 per cent of the privately owned vehicles and about 25 per cent of all classes have been temporarily retired from service.

According to the report there were 525,828 fewer cars registered in January 1940, than in the same month last year. There was a decline of 102,579 in motorcycles; 1,878 in cabs; 29,358 in transport vehicles and 102,481 classed as miscellaneous. The only type of motor-driven vehicle to register an increase was tractors, which gained nearly 38 per cent over 1939.

The report was issued by the London Petroleum Times to show the extent to which war with Germany has curtailed private vehicle operation and consequently the depressed consumption of petroleum products by civilian channels.

The Secretary for Mines announces the determination by the licensee of a prospecting license granted to Gulf Exploration Co. (Great Britain), Ltd. The area consisted of about 172 square miles in the counties of Kent and Sussex, including the town of Tunbridge Wells.

The secretary for mines announces the renewal for a further term of 12 months from January 25, 1940, of two prospecting licenses granted to Steel Bros. & Co., Ltd., London, consisting of about 173 sq. miles in the counties of York, Derby and Chester, and about 177 sq. miles in the counties of York, Lancaster and Chester.

Poland . .

Only Area Where Oil Property Confiscated

THERE has been practically no physical destruction of privately owned oil property in Europe and there has been no confiscation except in that part of Poland seized by Russia. This declaration was made last week in a statement to stockholders by John A. Brown, president of Socony-Vacuum Oil Co., Inc., one of the most extensive operators in Central and parts of western Europe.

"Volume of foreign business and profits increased satisfactorily during 1939 up to the beginning of the war," Mr. Brown declared. "Since that time, government restrictions upon civilian consumption of petroleum products in several countries have changed the ordinary course of consumption, and in the present confusion of world affairs, no clear judgment can be formed about future conditions.

"'The difficulties of business under war conditions are a further indication of the adverse effects of war upon industry. This company's business is a peacetime business, and no possible profits here or there under special war conditions can benefit us in the long run compared with the results of orderly, peaceful progress."

The test that tells

The testing engine in the refinery laboratory can't lie but it can and does give you three different octane ratings on the same gasoline by the three different methods

No wonder the Western Petroleum Refiners Association has standardized on one method

The real test engine is under the hood of the car on the road It is the real judge of gasoline It appreciates high anti-knock value—and other values that the laboratory engine never finds

Automobile engines, new and old, go for Dubbscracked gasoline—and how they go!

That's why so many refiners are increasing their Dubbscracking capacity

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

PROGRAMS AND MEETINGS

Natural-Gasoline Association Revised Tulsa Program

Featuring the presentation of two new standard test methods and broad discussions of problems involved in the production of natural gasoline at high-pressure recycling plants, the nineteenth annual convention of the Natural Gasoline Association of America gets under way May 15 at the Hotel Tulsa, Tulsa, for a 3-day session. The complete program was just announced by H. W. Harts, Warren Petroleum Corp., chairman of the convention committee.

The two new test standards are revised versions of the important methods for testing natural gas to determine its natural-gasoline content by the charcoal method and new test methods and specifications for the liquefied-petroleum gases; propane, butane, and mixtures of these products. All of these revisions are in line with changing conditions within the industry and part of the general plan of the technical groups of the association to modernize its standards to meet the demands of current practice. Because of the importance of these methods in the production and marketing phases of the industry there is wide interest in any revision of old standards.

Many of the complex problems in repressuring and pressure-maintenance operations are concerned with accurate meter measurement of wet gases which are under high pressures.

One entire session is to be devoted to discussion of the complex problem of handling and measurement of the high-pressure gases encountered in repressuring and pressure-maintenance operations. E. E. DeBack, Corpus Christi Corp., will review the mechanical problems and the methods by which they have been solved, with specific reference to high-pressure absorption, and Dr. G. G. Brown, University of Michigan, will discuss the deviations from Boyle's law of high-pressure gases. The latter paper will present deviation factors derived from the application of theoretical data on the supercompressibility of pure gases and gaseous mixtures to actual field measurements made by the association member companies especially for this discussion. The program follows:

Wednesday, May 15

Morning session.—T. R. Goebel, Shell Oil Co., Inc., chairman.

President's address: George P. Bunn, Phillips Petroleum Co.

"New Test Methods and Specifications for Liquefied Petroleum Gases," C. R. Williams, Continental Oil Co; chairman, technical committee.

"The N.G.A.A. Standard Form of Casinghead-Gas Contract," James E. Allison, Hanlon-Buchanan, Inc.; chairman, gas-contract committee.

Directors luncheon, Early American room.

Afternoon session.—H. E. Felt, Warren Petroleum Corp., chairman.

H. H. Anderson, vice president, Shell Oil Co., Inc.

"The Economics of Liquefied-Petroleum Gases," James W. Vaiden, Skelly Oil Co.

"The Value of Standardization to the Pacific Coast Natural-Gasoline Industry," W. W. Robinson, Jr., Texas Co.

4:30 p.m.—Annual meeting, Natural Gasoline Supply Men's Association, Topaz room.

5:50 p.m.—Special meeting and dinner, technical committee, Early American room.

Thursday, May 16

Morning session.—Ray E. Miller, Hanlon-Buchanan, Inc., chairman.

"Revised Charcoal Method for Testing Gas," H. L. Oder, Cities Service Oil Co., chairman, gas-testing committee.

"Neo-Hexane, the Fuel of Tomorrow," R. C. Alden, Phillips Petroleum Co.

"The Position of Natural Gas in Conservation," H. B. Bernard, consultant, Tulsa.

Presentation of the Hanlon Award for outstanding service to the natural-gasoline industry.

Noon.—Luncheon, courtesy, Natural Gasoline Supply Men's Association, Topaz room.

N.G.A.A. membership luncheon, Early American room.

Afternoon session.—E. O. Bennett, Continental Oil Co., chairman.

"Developments in Gas-Recycling Plants," E. E. DeBack, Corpus Christi Corp.

"The Measurement of Gas Flow Under High Pressure," G. G. Brown, University of Michigan.

Evening.—Informal dance at Tulsa Club, courtesy, Natural Gasoline Supply Men's Association.

Friday, May 17

Morning session.—Gene Middlebrook, Shell Oil Co., Inc., chairman.

Operating "kinks" session.

"Elimination of Hydrate Troubles," E. G. Hammerschmidt, Texoma Natural Gas Co.

Noon.—Luncheon, courtesy, Natural Gasoline Supply Men's Association, Topaz room.

Afternoon session.—Gene Middlebrook, Shell Oil Co., Inc., chairman.

Operating "kinks" session continued.

Presentation of "kinks" prizes.

Convention adjourned to attend special preview of the International Petroleum Exposition, arranged for registered delegates for Friday afternoon and Saturday morning. The exposition does not officially open until Saturday noon, May 18.

Indiana-Kentucky Society Meets at Bloomington

The May meeting of the Indiana-Kentucky Geological Society will be held on the campus of Indiana University, Bloomington, Ind., on May 17-18, and will include a field trip over the Indiana outcrop of the Chester series of the Mississippian system.

Ralph Esarey, state geologist of Indiana, will speak on "The Trenton of Indiana." Dr. C. A. Malott, professor of geology, will lead the field trip. The party will see Mississippian exposures including all formations from the Harrodsburg limestone of Warsaw age to the Kincaid limestone, the topmost formation of the Chester. The trip will terminate in Perry County. Two deep well cores, one a Chester core from Warrick County and the other a 2,600-ft. core bottomed 100 ft. in the Trenton, will be on exhibition. All geologists in the Indiana-Illinois-Kentucky area are invited.

Missouri Mineral Conference

Roy E. Mayes, president, Carthage Marble Co., was elected chairman of the Missouri Mineral Industries Conference at the second meeting of this organization held at the school of mines and metallurgy at Rolla. The conference, according to Dr. H. A. Buehler, head of the Missouri Geological Survey, was organized for the purpose of gaining a better knowledge of the possible services that can be rendered by the Missouri Geological Survey, the Missouri School of Mines and the U. S. Bureau of Mines.

CALENDAR OF EVENTS

May

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, thirty-second semiannual meeting, Statler Hotel, Buffalo, N. Y., May 13-15.

NATURAL GASOLINE ASSOCIATION OF AMERICA, annual convention, Hotel Tulsa, Tulsa, May 15-17.

INTERNATIONAL PETROLEUM EXPOSITION, Tulsa, May 18-25.

AMERICAN GAS ASSOCIATION, technical section, production conference, Hotel Pennsylvania, New York, May 20-22.

AMERICAN PETROLEUM INSTITUTE, midyear meeting, Fort Worth, Tex., May 27-31.

NATIONAL OIL SCOUTS AND LAND MEN'S ASSOCIATION, annual convention, Hot Springs, Ark., May 30-June 1.

June

ILLINOIS-INDIANA PETROLEUM CONFERENCE, eighth annual meeting, Robinson, Ill., June 1.

NATIONAL ASSOCIATION OF PURCHASING AGENTS (Oil Company Buyers' Group) annual convention, Netherland-Plaza Hotel, Cincinnati, Ohio, June 3-6.

SOCIETY OF AUTOMOTIVE ENGINEERS, summer meeting, The Greenbrier, White Sulphur Springs, W. Va., June 9-14.

SOUTHWEST PETROLEUM CREDIT GROUP, San Antonio, Tex., June 17-20.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, Milwaukee, Wis., June 17-20.

AMERICAN SOCIETY FOR TESTING MATERIALS, Chalfonte-Haddon Hall, Atlantic City, N. J., June 24-28.

ILLINOIS BASIN CHAPTER OF AMERICAN PETROLEUM INSTITUTE, McCurdy Hotel, Evansville, Ind., June 29.

September

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, Spokane, Wash., September 3-5.

AMERICAN CHEMICAL SOCIETY, Detroit, Mich., September 9-13.

NATIONAL PETROLEUM ASSOCIATION, thirty-eighth annual meeting, Hotel Traymore, Atlantic City, N. J., September 18-20.

NATIONAL LUBRICATING GREASE INSTITUTE, annual convention, Stevens Hotel, Chicago, Ill., September 30-October 1.

October

AMERICAN GAS ASSOCIATION, Atlantic City N. J., October 7-10.

NATIONAL SAFETY CONGRESS, Stevens Hotel, Chicago, October 7-11.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, eleventh annual meeting, Dallas, Tex., October 16-18.

TEXAS MID-CONTINENT OIL AND GAS ASSOCIATION, annual convention, celebrating Texas oil's forty-fifth birthday, Fort Worth, Tex., October 31-November 2.

November

AMERICAN PETROLEUM INSTITUTE, twenty-first annual meeting, Stevens Hotel, Chicago, November 11-15.

SPECIAL SECTION

THE OIL AND GAS JOURNAL

Describing Three-Plant

RECYCLING OPERATIONS

of Tide Water Associated Oil Co. and Seaboard Oil Co.

in Anderson County, Texas

Recycling Becomes Important Phase of Oil Operations

By EMBY KAYE

This specially prepared section is devoted to the construction and processing features of the three-plant recycling operation of the Tide Water Associated Oil Co. and Seaboard Oil Co. located in Anderson County, Texas.

The first experimental installation was placed in operation in 1937. This unit, which was later expanded into the plant now known as Cayuga No. 1, was a pioneer development in a new phase of the oil industry's operations. The following year a larger plant incorporating the same general processing methods developed at the first plant was built in the Long Lake field.

The latter part of last month a third plant—the Cayuga No. 2—was completed and placed in operation. The three plants are interconnected and largely operated as one unit which now constitutes one of the industry's major recycling operations. The entire operation has a capacity of 125,000,000 cu. ft. daily with an output of approximately 120,000 gal. daily. Nine thousand acres are included in the operating area.

RECYCLING, in which a so-called distillate is separated or extracted from gas at high pressure and where the dry gas is returned to the formation, may be regarded as a form of pressure maintenance in a gas reservoir. In recycling, the substance to be recovered is liquefiable or useful hydrocarbons. But in a high-pressure gas field the problems faced are increased by the fact that unless approximately the original pressure is maintained most of the distillate may be lost through condensation in the formation as a result of retrograde condensation.

However, if gas is not wasted, such loss need not be at all serious. The quantity of liquid recovered in the recycling plant aboveground is so small that its extraction from the gas as it originally existed in the sand exerts a negligible influence on the pressure when the residue gas is returned to the formation. In other words, in the recycling operation the gas is brought to the surface and run through the plant with a minimum of pressure drop, and the effect of retrograde condensation is achieved as a plant function and is avoided in the reservoir.

Extraction Methods

Some of the problems posed by the introduction of recycling have been solved, and others will be worked out through further experience and research. At least five variations of extraction methods are in use, including:

1. Retrograde condensation and water cooling.

2. Retrograde condensation and moderate refrigeration and concurrent circulation of a portion of the recovered condensate.

3. Retrograde condensation and low-temperature refrigeration.

4. Retrograde condensation and low-temperature refrigeration and countercurrent circulation of a small portion of the flashed condensate.

5. Retrograde condensation and circulation of a portion of the recovered condensate as an absorbing medium.

Results from all of the processes are satisfactory for the particular conditions in which they are employed. Further work is being done to approach the ideal process, the fundamentals of which are obvious to those seeking it, namely, (1) high extraction of condensate and (2) high operating pressure under which extraction or separation takes place. Improved extraction methods will come, and materials and equipment to meet the increased requirements of still higher pressures will be developed to meet the demand.

A great deal is yet to be learned about the behavior of dry gas returned to the reservoir after separation of the distillate. Very little empirical data is available although several important theoretical articles have been published on this subject, which, second only to the recovery process, was the most important phase of recycling. These data and theoretical calculations show that a well pattern for input and output wells can be designed for a field so that substantially all of the wet gas may be produced. As the earlier recycling operations become older, the present data will likely be substantiated and gas distillate recoveries predicted with greater accuracy.

Emby Kaye, vice president and manager, Distillate Engineering & Processes Co.

Feasibility of Unitization

There is practically unanimous agreement that in the development of a gas-distillate field, unit operation is fundamental. Single planning for a field is mandatory if optimum production is to be achieved and if each lease and royalty owner is to receive an equitable return for his share of the condensate in place under his property. Unitization should be 100 per cent complete for both working and royalty interests to make this possible.

After a better understanding of gas production under conditions obtaining in a recycling project, operators and royalty owners alike will realize the feasibility of wide spacing of wells for purposes of unitization, and recognize not only 400 acres, but even as much as 600 as an efficient drainage area for one well. When it is recorded that in several fields plants are operating or contemplated on the basis of one well for every 75 acres, it is not difficult to contemplate the kind of waste which results in a nonunitized area. Moreover, in one of these fields the multiple location of input wells is tending earlier to dry up certain areas and to create gas pockets in others.

Most of the existing plants process gas from sands on the order of 4,200 to 6,500 ft. Some of the newer projects will be obliged to return gas to formations 9,000 to 10,000 ft. deep. Reservoir pressure in fields where pressure is being maintained by recycling runs from 1,600 to about 4,000 lb., but higher pressures soon will be exploited.

At present most of the plants center around Corpus Christi, Tex., and East Texas (near Palestine). Several of the largest projects, presently to be developed, are in the Northwest Louisiana and central Gulf Coast areas.

Little more than 2 years ago some 15,000,000 cu. ft. of gas was being processed daily through the first two recycling plants. Today more than 650,000,000 cu. ft. is being processed, and with the completion of plants under construction or definitely projected, more than 1,300,000 cu. ft. of gas should be processed daily through 30 plants. At what rate future developments will come is anybody's guess.

The three plants as well as one other plant in the Long Lake field are licensed by the recently organized Distillate Engineering & Processes Co. This company holds licensing rights from the Standard Oil Development Co., Stanolind Oil & Gas Co., Seaboard Oil Co. of Delaware, Eureka Process Corp. and Tide Water Associated Oil Co. The company was formed to license and further develop the art of recycling. Basic patents cover the inventions of Jay P. Walker and Edwin V. Foran, George S. Bays, William H. Vaughan and others.

D. E. LEGAN

Production superintendent, Texas, Louisiana and New Mexico division, Tide Water Associated Oil Co.

W. H. VAUGHAN

General superintendent, recycling operations, Tide Water Associated Oil Co. and Seaboard Oil Co.

M. E. SCHWARZ

Superintendent of production, Seaboard Oil Co. of Delaware

VIEWS OF THE THREE PLANTS

LONG LAKE

CAYUGA NO. 2

CAYUGA NO. 1

NELSON C. TURNER

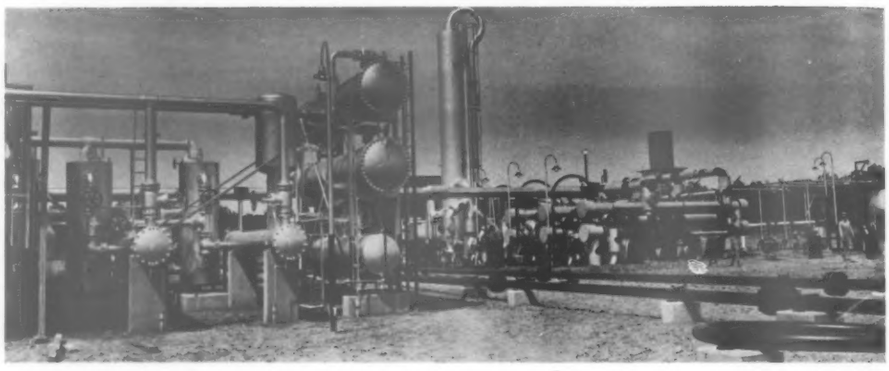
Many New Features In Design of Cayuga No. 2 Recycling Plant

By NELSON C. TURNER
Mase-Turner Engineering Co., Associated With the Frick-Reid Supply Corp.

FUNDAMENTALLY the process used at the Cayuga No. 2 recycling plant is similar to that used at the two other plants of the Tide Water Associated-Seaboard trio in East Texas. There are, however, several features peculiar to this plant which may be of interest.

The plant was designed for a capacity of 40,000,000 cu. ft. a day. The gas enters the plant at a pressure of 1,400 lb. gage and after cooling with water, exchange and ammonia refrigeration to a temperature of 5° F., the pressure is reduced through an expansion valve to 1,250 lb. gage. The Joule-Thompson effect accompanying the reduction in pressure brings the final temperature down to 0° F. This is the condition under which the separator fluid is removed from contact with the main stream of gas. Compositions of the separator fluid, as well as the residue and green gas streams, are shown in Table 1.

The high-pressure separator fluid is withdrawn and flashed at approximately 400 lb., the temperature dropping to —12° F. The composition of the liquid and vapor resulting from the flashing operation is shown in Table 2.



View of the refrigerating unit at Cayuga No. 2 plant

Tower of Cayuga No. 2 plant, which is insulated with felt and cork, covered with tar paper and a protective coat of galvanized sheet iron

TABLE 1

	Green gas mol %	Separator fluid mol %	Residue gas* mol %
C-1	91.13	43.75	95.66
C-2	2.94	9.40	2.33
C-3	2.02	11.55	1.12
IC-4	.47	3.80	.15
NC-4	1.29	10.30	.43
IC-5	.21	2.45	.31
NC-5	.66	3.90	.....
C-6+	1.28	14.85	.....
	100.00	100.00	100.00
Cu. ft. day	40,000 M.c.f.	.....	36,600 M.c.f.

*This is without circulation. See paper and analysis by William H. Justice in this section.

TABLE 2

	Flash-tank vapor (mol %)	Flash-tank liquid (mol %)
C-1	93.74	16.65
C-2	4.39	12.05
C-3	1.23	17.10
IC-4	.15	5.80
NC-4	.25	15.85
IC-5	.24	3.75
NC-5	....	5.90
C-6+	....	22.90
	100.00	100.00

It will be noted that the liquid from the flash tank still contains too much methane and ethane to be handled satisfactorily in an ordinary stabilizer since reflux could not be produced at the temperature of the cooling water available. At Long Lake† this problem was handled by roughly cutting out a large portion of the methane in a preliminary fractionator, using as reflux excess liquid overhead from the final stabilizer. At Cayuga No. 2, this expedient was impossible, since all the product from this plant is ultimately pumped to Cayuga No. 1 for stabilization, and consequently no external source of reflux is available at Cayuga.

A second flashing operation would ordinarily result in a serious loss of butane and heavier hydrocarbons to the flashed vapor. This loss, however, has been reduced to a negligible value by further cooling of the liquid prior to flashing.

This cooling is accomplished without the use of mechanical refrigeration by using the liquid withdrawn from the second, or low-pressure, flash tank, to subcool the liquid about to be flashed. The heat exchange between these two streams makes it possible to conduct the second flashing operation at temperatures below —50° F. At temperatures of this order the ratio of the equilibrium constants of two adjacent light hydrocarbons becomes so great that reasonably sharp separation may be obtained in a simple flashing operation. It may be remembered that this principle was used in the earliest analysis of natural gas, in which no fractionating column was used, only very low pressures and temperatures.

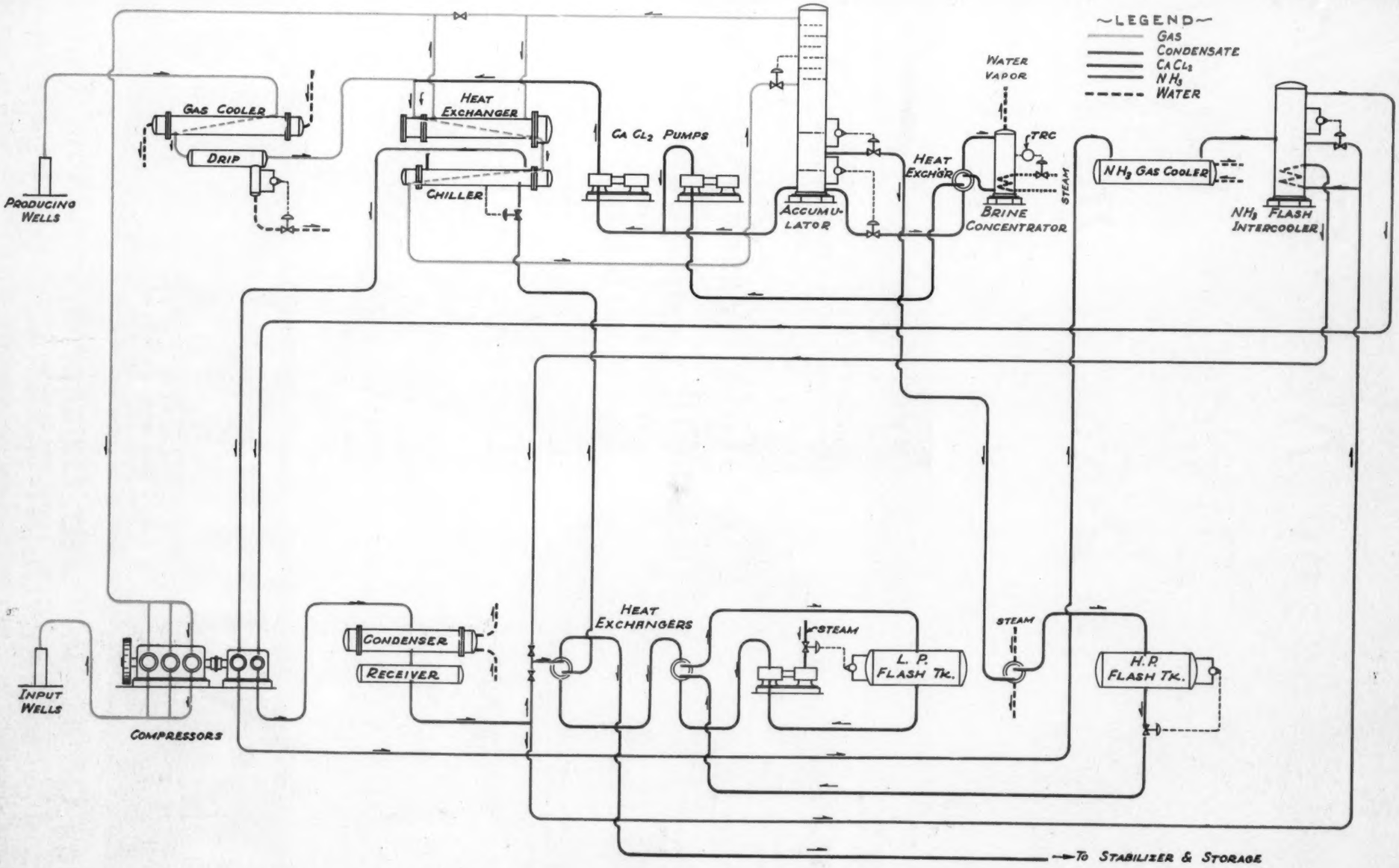
TABLE 3

	Low-pressure flash vapors (mol %)	Low-pressure flash liquid (mol %)
C-1	61.03	1.60
C-2	22.01	2.49
C-3	11.41	8.90
IC-4	2.64	3.94
NC-4	2.04	14.81
IC-5	.38	7.16
NC-5	.27	8.30
C-6+	.22	52.80
	100.00	100.00

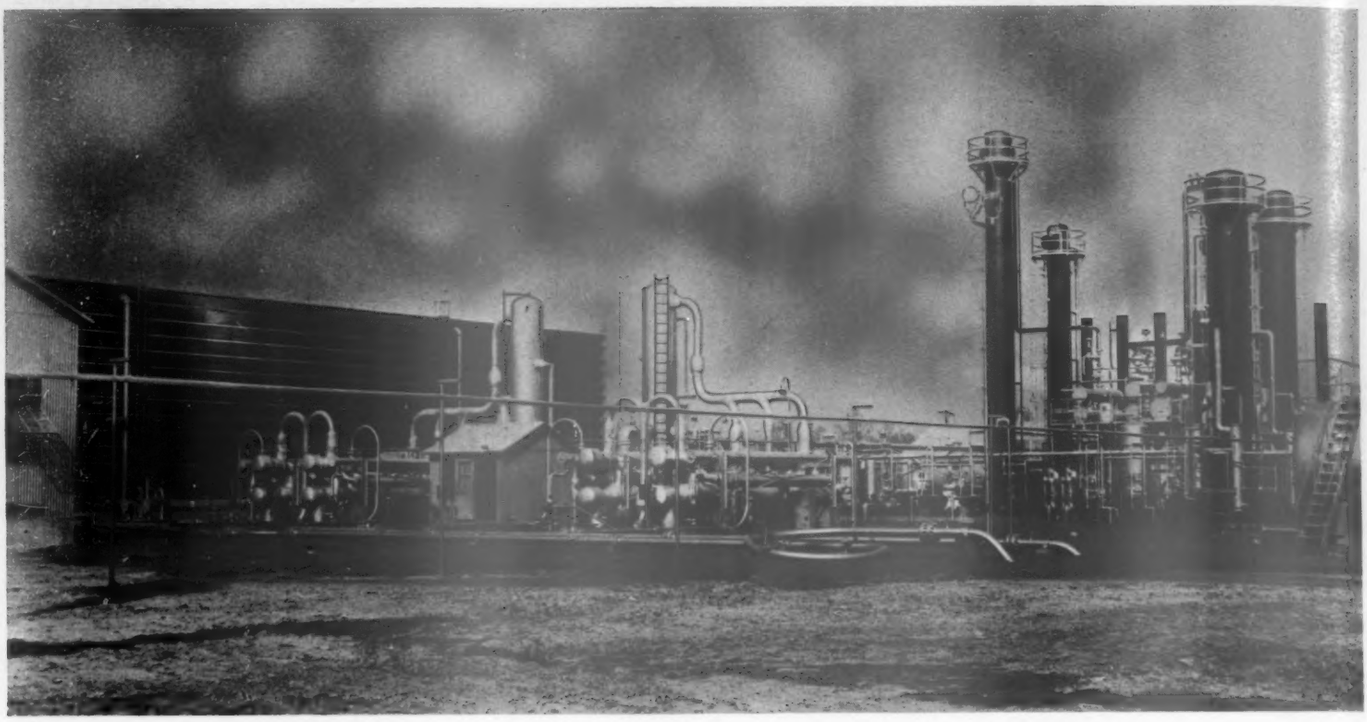
The effectiveness of the second flashing operation may be seen in Table 3, which gives the com-

(Continued on Page 62)

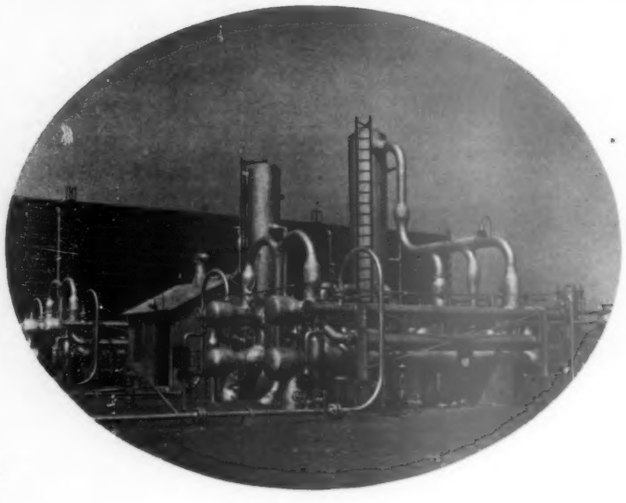
†See accompanying article in this issue by H. A. Martin.



Flow chart showing principal processing features of recycling operations at Cayuga No. 2 plant



Long Lake recycling plant of the Tide Water Associated Oil Company and Seaboard Oil Company of Delaware at Long Lake, Texas.



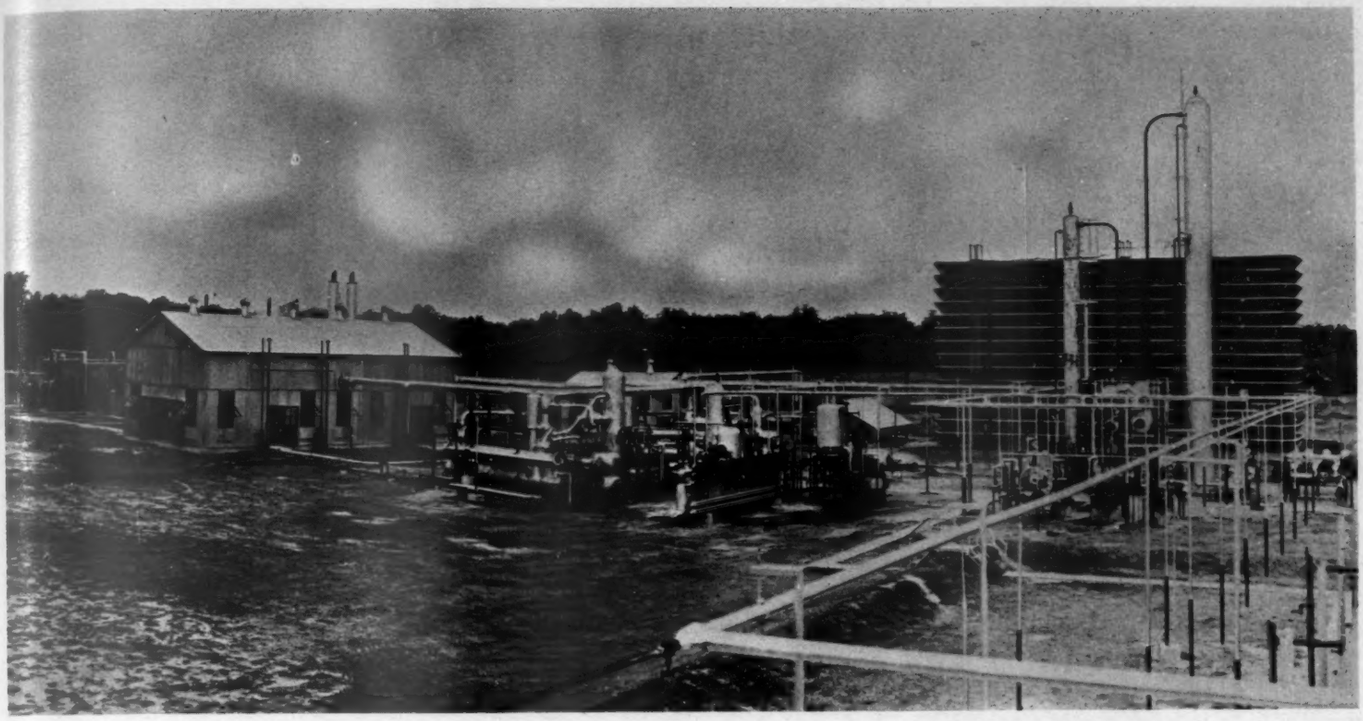
Tide Water Associated Oil Company and Seaboard Oil Company East Texas Recycling Developments . . . .

J·F·PRITCHARD
KANSAS CITY . . .

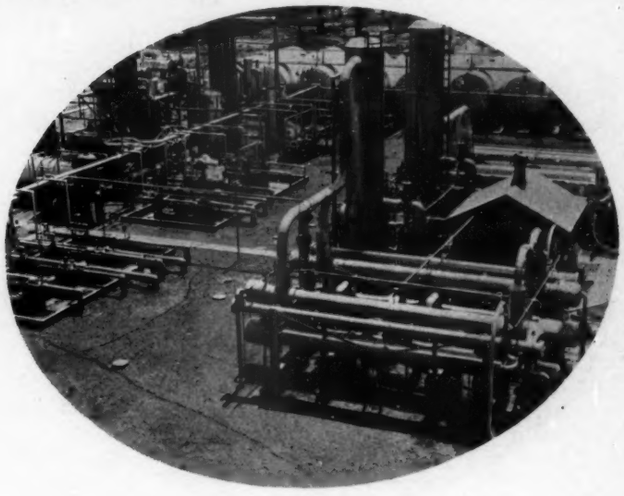
Branch Offices in Tulsa, Oklahoma; Houston, Texas - - -

- - - - - - - RECYCLING EXTRACTION PLANTS - - -

COMPRESSOR PLANTS - - - POWER PLANTS - - - COOLING



Cayuga No. 1 high pressure extraction and recycling plant of Tide Water Associated Oil Company and Seaboard Oil Company of Delaware at Cayuga, Texas.



DESIGNING AND CONSTRUCTION ENGINEERS

AND COMPANY
MISSOURI

Columbus, Ohio; Chicago, Ill.; and St. Louis, Mo. - - -

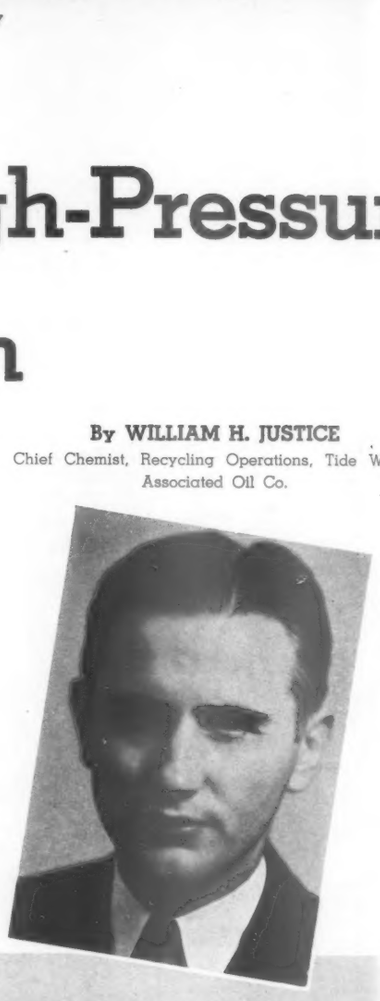
GAS DEHYDRATION - - - PURIFICATION PLANTS - - -
TOWERS - - - HEAT EXCHANGERS - - - GAS CLEANERS

Night view of Long Lake plant, silhouetted against a clear sky

Process Engineering in

Low-Temperature, High-Pressure Condensate Extraction

By WILLIAM H. JUSTICE
Chief Chemist, Recycling Operations, Tide Water Associated Oil Co.



THE high-pressure extraction and recycling plant of the Tide Water Associated Oil Co. and the Seaboard Oil Co. of Delaware, jointly owned in the Long Lake field, Anderson County, Texas, is 11 miles west of Palestine, Tex. This plant was designed to handle 60,000,000 cu. ft. of gas daily, with a condensate recovery in excess of 1 gal. per 1,000 cu. ft., at an operating pressure of 1,500 to 1,600 lb.

The plant has been operated successfully at pressures within this range and at temperatures as low as —20° F. A recent operation at 1,800-lb. pressure and 90° F. temperature showed results comparable with the average recycling plant.

The process used in the design of this plant includes all the original fundamental principles established by William H. Vaughan in earlier operations at Cayuga. While the low-temperature operation is perhaps considered new in this application, it is conventionally used in connection with natural-gasoline plants and refinery operations at lower pressures with success, and the function of a refrigeration plant may be considered by engineers as a simple and easily controlled operation.

High Extraction Efficiency

This process was one of the first successful commercial processes developed for the recovery of condensate from natural gas at pressures sufficiently high to make recycling profitable. The process has been continuously improved until it now shows an extraction efficiency at an accumulator operating pressure of 1,500 lb. and 0° F. of 95.2 per cent of the pentanes plus, 87.5 per cent of the normal pentanes, 94.4 per cent of the isopentanes and 70 per cent of the normal butane. The process extracts the above percentages of the desirable hydrocarbons from a green gas that contains only 1.06 gal. of pentanes plus, as shown by low-temperature fractional analysis. The process is even more efficient on richer gas.

LOW-TEMPERATURE FRACTIONAL ANALYSES
LONG LAKE PLANT

	Source				
	Gas to plant		Residue gas		
	Mol %	G.P.M.	Mol %	G.P.M.	% extracted
Methane	91.41	...	96.13	.....	.....
Ethane	3.08		1.77		.....
Propane	1.88	0.51	1.43	0.3870	.....
Isobutane	.25	.08	0.22	0.0720	20.0
n-Butane	1.08	.34	0.36	0.1127	70.0
Isopentane	.32	.12	0.02	0.0146	94.4
n-Pentane	.44	.16	0.06	0.0073	87.5
Hexanes plus	1.54	.78	0.02	0.0082	98.83
Pentanes plus	...	1.06	....	0.0371	95.22

Extraction Conditions

Operating pressure, lb.	1,500
Operating temperature, °F.	0
Countercurrent circulation—	
Gravity, A.P.I.	42
390° F. I.B.P., G.P.M.	.667

The major per cent of the condensate recovered by the high-pressure processes in use at any temperature or pressure is separated in the lower part of the accumulator as the result of retrograde condensation. The top section of the high-pressure condensate accumulator is equipped with bubble

A 16-car loading rack near the Long Lake plant, together with a 6-car auxiliary rack, serves as a rail outlet for finished products of all three recycling plants

trays to aid in the recovery of a high percentage of the remaining desirable hydrocarbons, especially isopentane, normal and isobutane and propane. These high-octane hydrocarbons are recovered at the low temperature with a small circulation per 1,000 cu. ft. of light, efficient oil. The lower temperature operation does not increase the extraction of methane in proportion to the increase in the extraction of the desirable fractions. This is shown by comparing the K factors at the high and low temperatures.

Most of the extracted methane and ethane can be removed by flashing the condensate in a low-temperature flash system, without the loss of desirable hydrocarbons, since the product being at a subnormal temperature is further dropped to temperature resulting from the flashing. Any remaining methane and ethane are fractionated from the product in a high-pressure fractionator. The flashing of the condensate develops a substantial amount of refrigeration which is used to remove heat from the warm ammonia liquor, thereby reducing the horsepower required to operate the reciprocating ammonia system.

Oil Circulation

By using the low molecular weight, more efficient oil for circulation countercurrent with the gas, it is not necessary to have a separate still and recovery equipment to handle the circulated oil. The oil can be handled along with the plant production in the regular rerunning operation without any additional equipment. Considering the recent improvement in cracking, polymerization, and alkylation of the lighter hydrocarbons, the low-temperature processes which have been definitely proven as to recovery of a high percentage of isopentanes, normal butane, and isobutanes and propane may be the most economical and profitable operation. Already there is a firm demand for isopentane, normal butane and isobutane. The refiners are exceedingly interested in butane that contains 50 per cent or more of isobutane.

The circulation of the heavier stripped higher-boiling hydrocarbons accomplishes a threefold purpose. At certain temperatures the maximum pressures within the retrograde range at which efficient recovery of the desirable constituents may be effected has been substantially raised, the percentage of recovery of desirable constituents greatly increased, and the refrigeration resulting from flashing expansion and vaporization of the undesirable constituents greatly increased.

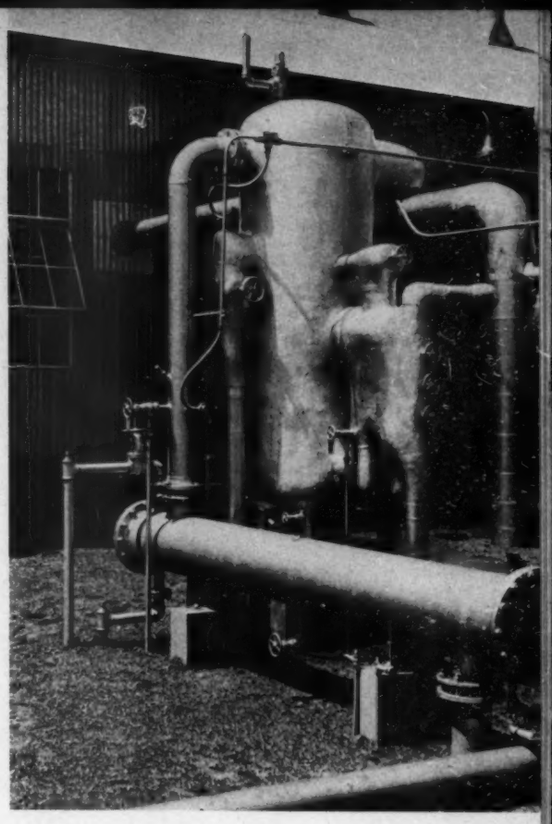
To recover the same percentage of the high-octane hydrocarbons at a higher temperature, would require a much higher oil rate.

The effect of increasing the oil rate is to increase the absorption of all components. In the case of the pentanes, which are 90 per cent or more condensed or absorbed, the increase in oil rate has relatively less effect in increasing the percentage absorbed than it does on the absorption of methane and ethane. This effect is of great importance with a lean gas. If the oil circulation is increased beyond a certain limit the selectivity of the absorption is so decreased that the composition of the raw gasoline begins to approach the composition of the original gas. It is difficult at the higher temperatures to remove the methane and ethane from the condensate without the loss of desirable constituents.

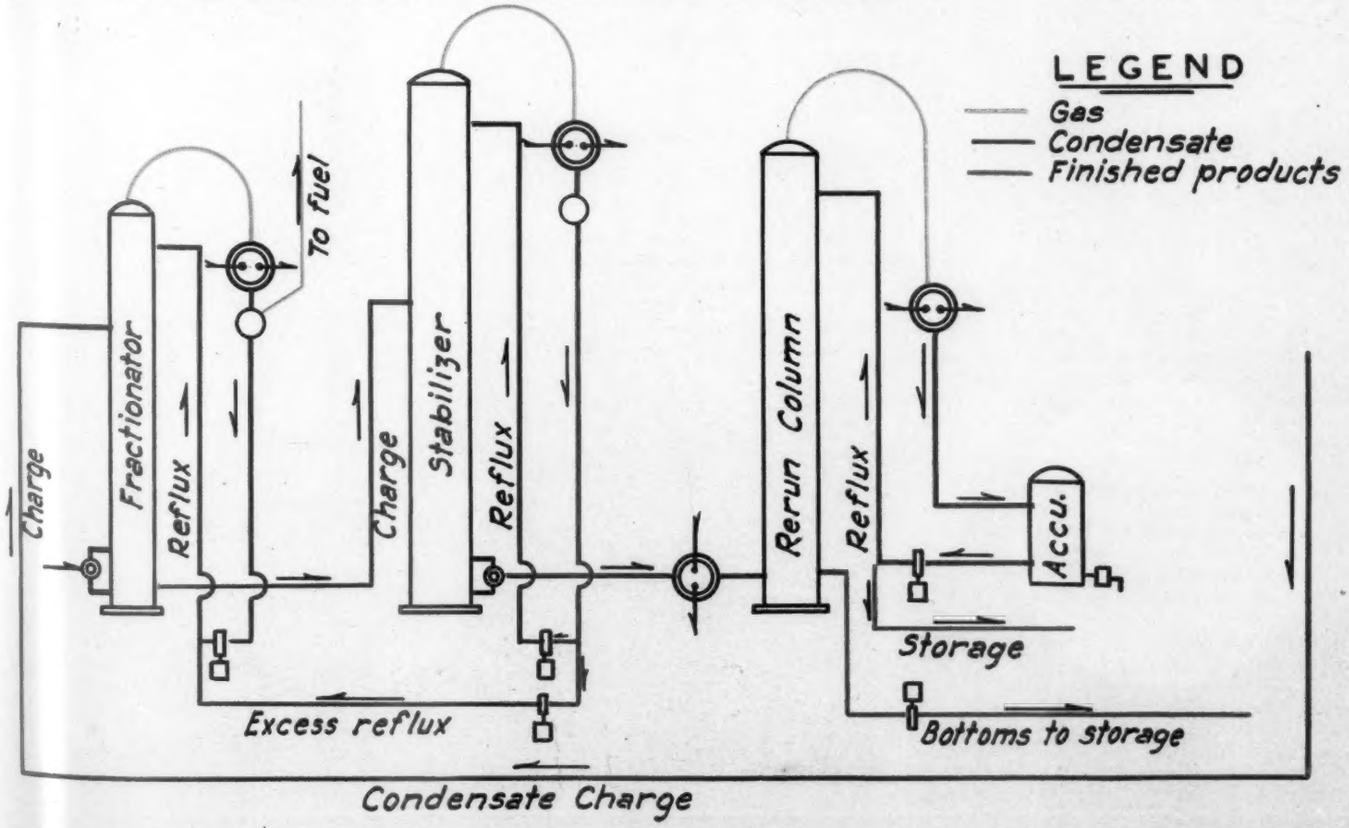
Usually the raw gasoline is vented in a three-stage vent tank system and the vent gas is passed through a tail absorber to remove the desirable hydrocarbons lost by venting. The absorbed gas represents a considerable per cent of the original green gas and is available only at low temperatures. It is not profitable therefore to return it to the formation. It is important to return the maximum amount of the remaining processed gas, with a minimum extraction loss, to the formation, as a small reduction in reservoir pressure may result in an irretrievable loss of condensate due to retrograde condensation in the reservoir.

Many methods of determining the content of a green gas such as is produced from the Woodbine formation in the Long Lake field have been used and in most cases they prove to be an expensive

(Continued on Page 70)



Ammonia vapors from the first stage of the compressor are cooled in the water cooler in the foreground, then charged to the top of the flash intercooler where it contacts with evaporated ammonia, the total stream then going to the second stage of compression



Flow chart of stabilizer and rerun unit

Again, the Leaders

Battery of four 400-hp Type G-MV, and two 300-hp Type G-MR compressors, at Tide Water-Seaboard companies' Long Lake plant.

Looking down the line at Long Lake, with the 300-hp Type G-MR ammonia compressor units in the foreground.

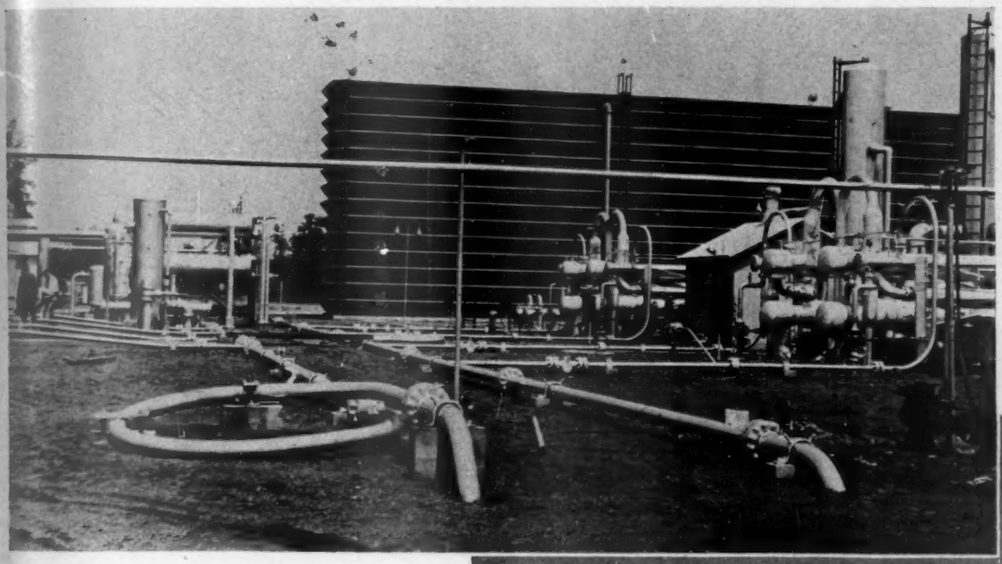
THE COOPER-BESSEMER CORPORATION

Mount Vernon, Ohio — PLANTS — Grove City, Penna.

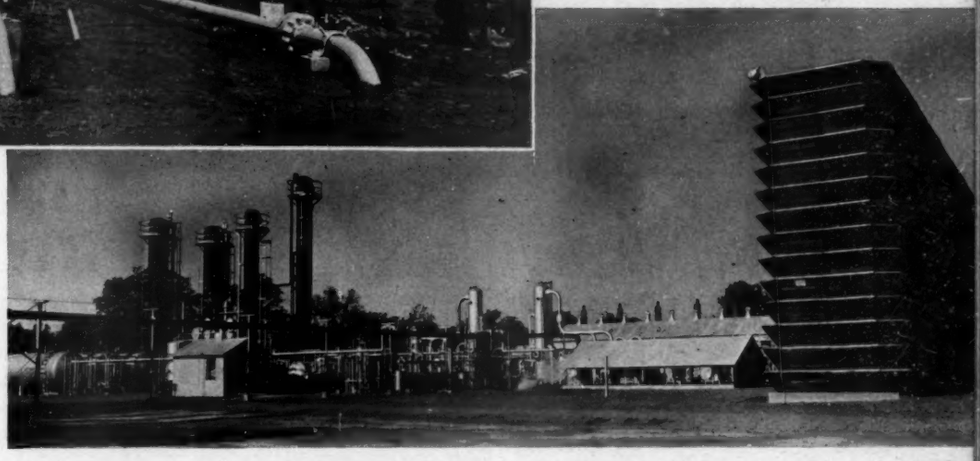
Modern Equipment Meets Exacting Demands

By H. ARTHUR MARTIN
J. F. Pritchard & Co.

H. ARTHUR MARTIN



Above: High-pressure, shop-fabricated piping is installed throughout the Long Lake plant. All main lines are made accessible aboveground, well supported, and designed to allow for expansion and contraction



Right: Design of the Long Lake recycling plant affords efficient operation through location of processing units to their functions. In addition to recycling Long Lake gas, the plant finishes the condensate products from the two Cayuga plants

THE key plant and largest of the three Tide Water Associated-Seaboard units in East Texas is located in the Long Lake field. Contract for its construction was let to J. F. Pritchard & Co., of Kansas City, Mo., and initial operations began in December 1939.

Because of the broad scope of the Long Lake plant it is of special interest. Designed to process 60,000,000 cu. ft. of gas daily, it is capable of producing 60,000 gal. of distillate per day. In addition to the recycling-extraction section of the plant, complete stabilization, rerunning, storage, and loading facilities are provided for reworking and handling the products of all three plants, amounting to 120,000 gal. A feature of the plant design is the correlation of various unit operations into a single efficient and systematic plant operation with a minimum of operating labor.

To provide close control of operations, a well-equipped laboratory has been established on the plant site. Through this laboratory, control is maintained on all products from the three recycling plants, whose flexibility assures economic manufacture of specification products with widely varying characteristics. This flexibility makes it possible for operators to meet and take advantage of the most favorable markets for a variety of products.

In the construction of the Long Lake plant, modern equipment for each operation was selected. Advanced technology, which characterizes the (Vaughn) gas process, has been applied likewise to the design and fabrication of much equipment which serves the plant requirements.

Engines and Compressors

Raw gas from the field gathering system is brought through the water separators, exchangers, chillers and process equipment to the compressor cylinders. Temperature and pressure are controlled so that the most economical use of installed horsepower is possible. The gas is returned to the key wells from these units.

The compressors normally take gas from the process equipment at 1,600 lb. per sq. in. and 54° F., compressing it to 2,500 lb. per sq. in. at 128° F. These units may be operated at lower suction pressures with suction temperatures as low as 20° F.

Cylinder sizes, unloading facilities and manifolding at cylinders received special attention so as to attain the greatest flexibility in operation.*

Refrigeration Equipment

Two-stage compression with combination tubular and flash intercoolers are used to handle ammonia vapors from the gas chillers to the condensers. All of this equipment is compactly arranged near the compressor units to reduce piping costs.

A feature of the ammonia system is the use of a small motor-driven ammonia pump-out compressor so connected that any unit may be isolated and pumped free of ammonia. Facilities for conserving refrigeration by heat exchange between cold fluids have been provided in this cycle.

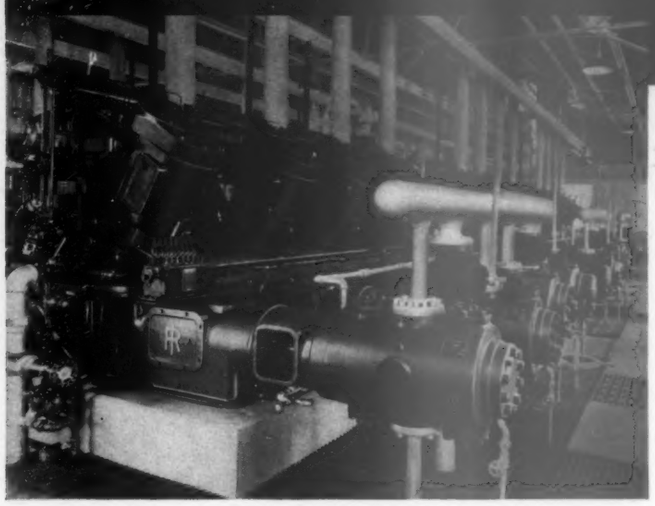
High-Pressure Heat Exchange Equipment

Raw gas enters the plant system at approximately 114° F. and 1,900 lb. per sq. in. and is precooled in high-pressure shell and tube coolers. The flow of water through these coolers is controlled by a thermostat in the gas outlet lines, to automatically maintain an outlet gas temperature above the hydrate freezing point. The gas outlet temper-

*See equipment details at end of article.

SELECT IR COMPRESSORS

for REPRESSURING OR RECYCLING



REPRESSURING AT LANCE CREEK This compressor plant, operated for three companies in the Lance Creek field, Wyoming, has three 8-XVG gas-engine-driven compressors. All cylinders are operating on repressuring service.

RECYCLING AT CAYUGA NO. 1 Two XVG gas-engine-driven compressors operated by Tidewater Seaboard Oil Co., Cayuga, Texas. The unit in foreground has two ammonia cylinders, operating 2-stage from 5-lb gauge intake to 185-lb gauge discharge. All other cylinders on this and the second machine are operating on recycling service.

● You can install one or a dozen of the *"VG"* series of Ingersoll-Rand gas-engine-driven compressors with complete confidence in the conservative design and time-proved construction principles of these pioneer units.

Compare them point by point with any machine you wish. They provide the inherent advantages of simple and reliable four-cycle design. And when it comes to high-pressure compressors, Ingersoll-Rand has been the leader for 50 years, having supplied over 400 compressors for pressures from 2,500 to 15,000 pounds per sq. in., totalling about 85,000 horsepower. Such reasons are why you will want to select Ingersoll-Rand XVG and LVG compressors.

Ingersoll-Rand oil field representatives are ready to help you with your compressor, pump or engine problems. *Stop in to see them at the Tulsa show.*

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LVG Gas-Engine-Driven Compressor
485 and 650 hp.

XVG Gas-Engine-Driven Compressor
75, 150, 225 and 300 hp.

PLVG Gas Engine
485 and 650 hp.

PVG Gas Engine
185, 275 and 370 hp.

Type S Convertible Gas-Diesel Engine
Sizes 190 to 510 hp.

RTS Pipe-Line Pump
200 to 1,300 lb
150 to 2,000 gpm.

Atlanta, Birmingham, Boston, Buffalo, Butte, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Duluth, El Paso, Hartford, Houston, Kansas City, Knoxville, Los Angeles, Newark, New Orleans, New York, Philadelphia, Picher, Pittsburgh, Pottsville, Salt Lake City, San Francisco, Scranton, Seattle, St. Louis, St. Paul, Tulsa, Washington

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ature is maintained at 84° F. and 1,865 lb. per sq. in.

The partly cooled gas enters a horizontal-baffled liquid separator, in which both liquid condensate and water are removed from the gas. The water is separated and removed through automatic high-pressure dual-gravity liquid-level controllers. The liquid condensate may or may not be removed from the gas at this point.

The gas from the separators passes through gas-to-gas heat exchangers, where it is cooled from 80° F. to 28° F. with treated gas entering the units from the high-pressure accumulators. From the exchangers the raw gas enters the direct ammonia-to-gas chillers, where gas and liquid are cooled to 0° F. at 1,845 lb. per sq. in. The arrangement of coolers, separators, gas-to-gas exchangers and chillers, in four parallel sets, is very flexible. All units are carefully constructed and selected for their specific service.

Water-Cooling System

Raw water makeup for the entire plant is brought in from a well and plant supply system from which circulating water pumps supply raw water to process units in the plant. The large atmospheric cooling tower, located in an area of low-wind velocity is designed to function with a wind velocity of 2 miles per hour, maintaining a constant supply of cooled water at all times.

A closed cooling system is provided for the gas engine and compressor jackets. Raw water from the tower basin is circulated through the tubes of shell and tube jacket-water coolers. Jacket water from the engines is pumped through the shell side of the jacket-water cooler to the engine jackets, through an expansion tank and back to the jacket-water pumps. This closed cycle effectively prevents scale formation in the engine jackets and oil coolers, and at the same time, provides uniform engine-jacket temperatures, through use of an automatic jacket-water temperature controller.

Accumulator Columns

The chilled raw gas leaving the ammonia chillers with liquefied condensate and calcium chloride is brought to an expansion valve on the inlet to the accumulator column at 0° F. and 1,845 lb. per sq. in. The gas is expanded to 1,600 lb. per sq. in. through these valves, and the temperature drops to —11° F.

The accumulator columns are provided with large liquid accumulating chambers in their bases, where the condensed liquid and calcium chloride are removed from the gas streams. Dual-gravity floats separate the calcium chloride from the condensate and release it to the circulating system. The raw condensate is automatically bled to the flash and stabilizing system.

The accumulators are equipped with bubble trays above the condensate separating chambers, where the residue gas is contacted with a small stream of heavy oil from the rerun stills. A dual mist extractor consisting of a wetted saddle-packed baffle, and a hook plate extractor effectively separates fine mist from the residue gas stream.

The accumulator columns are designed for a safe working pressure of 1,600 lb. per sq. in. at —20° F. The shells are of 2½ per cent nickel steel X-rayed and stress-relieved, with a Hartford inspection certification. The float valves and reducing valves on these units were carefully selected for most arduous service and have functioned most satisfactorily.

Calcium Chloride System

Concentrated calcium chloride, which is injected into the gas stream to prevent hydrate formation at low temperatures, is withdrawn from the base of the accumulator to a flow tank. From the tank, a portion is removed to the reconcentration system and clean highly concentrated material is returned to the flow tank, to be recirculated to the gas streams. The quantity of calcium chloride to be reconcentrated is adjusted so that the total water picked up in the gas cycle is eliminated in the reconcentration system.

Stabilizing and Rerun Units

The liquid raw condensate is released from the accumulator columns to a high-pressure flash tank, where it is flashed from 1,600 to 220 lb. per sq. in., and the temperature drops from —11° to —22° F. Vapor overhead from this flash chamber is released to the plant fuel system.

Between the flash tank and the stabilizer unit, the cold raw condensate takes heat from liquid ammonia in a bank of heat exchangers. Stabilization is carried out in two columns the first of which is held at a high pressure to remove methane and ethane without loss of heavier products. The second or low-pressure stabilizer column operates with total condensation of overhead products as reflux, and excess reflux above its requirements is used to reflux the high-pressure unit. Propane-free condensate with maximum butane retention is easily attained. The combination cycle is very flexible, providing close control of product specifications.

Two rerun columns are in service at Long Lake. One is used for the local products and the second reruns products from the two Cayuga plants. The units are identical and are designed to distill overhead 90 per cent of the stabilized condensate feed. Flexible operation and close control facilitate output of products with widely varying characteristics.

Utilities

The steam generating plant includes seven boilers of 150 hp. and working pressure of 250 lb. per sq. in., each equipped with water columns, pop safety valves, nonreturn valves, gas burners, feedwater regulators and blowoff valves. Boiler-feed water at 210° F. is pumped from a boiler-feed tank to the boilers by three duplex boiler-feed pumps.

Steam, generated at 225 lb. per sq. in., is distributed to turbines, pumps, and process equipment through an overhead piping system. Exhaust steam and condensate from the process units are returned from operating units to the boiler-feed heater. Fuel gas to the boilers is controlled automatically by a steam-pressure-actuated main fuel valve.

The plant is well lighted with a system of flood lights and unit lights served by a steam turbine-driven generator set at 440 volts, 3-phase, 60-cycle current, distributed through transformers and on enclosed switchboards to the various circuits.

The office building comprises two office rooms and a third room which may be used as a laboratory. In addition to normal equipment housing, instrument housing and the special laboratory, a small machine shop and warehouse are provided, with locker-room facilities for the operating crew in the boilerhouse.

Piping and Insulation

Gas from the field system is delivered into a 6-in. intake header system from both the north and south areas of the field. From the intake header, four parallel lines connect to the four processing units. Inlet gas meters are connected into each of these lines. Gas streams from the processing units enter a suction header, thence through the compressors and out through a discharge main to the intake wells in the field.

The high-pressure piping is of special interest. All high-pressure piping is Grade B, Schedule 120, fitted with Series 1500 A.P.I. ring-joint fittings. Special attention and care are taken to eliminate right-angle turns. Streamlining of important connections eliminated much vibration that results from high-speed compressor operation. All high-pressure piping is shop-fabricated.

High-pressure piping, correctly designed and installed is a major item of investment in a recycling plant. The high-pressure piping at Long Lake is extremely trim, with all main lines readily accessible aboveground, well supported and provided with ample expansion bends.

Insulation of lines and vessels operating at low temperatures consists of layers of hair felt properly applied and sealed. All lines are finished with metal covering for waterproofing. Hot lines and vessels are covered with conventional magnesia block and plastic insulation material suitably weatherproofed.

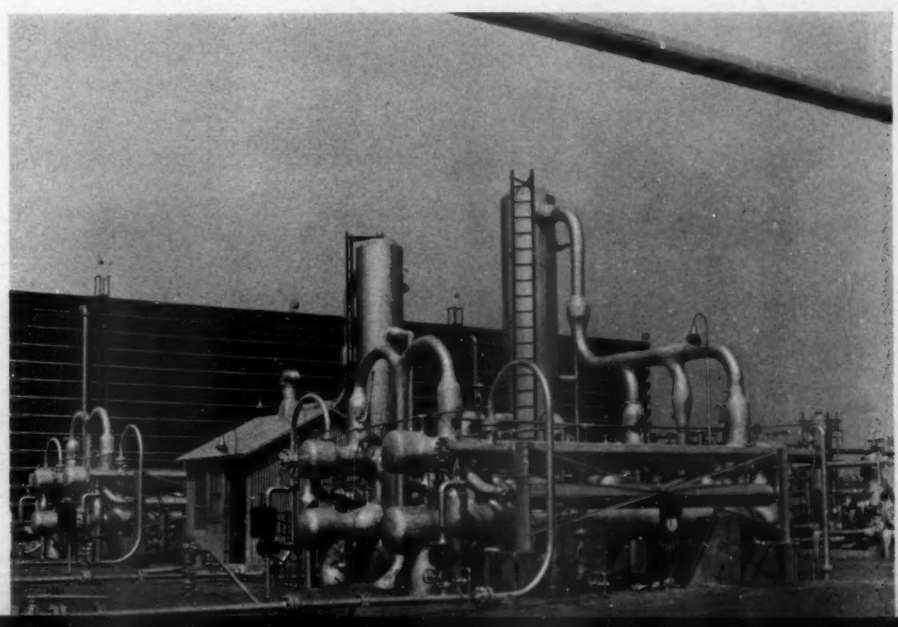
Instruments and Controls

Instruments are widely used throughout the plant, and an accurate, minute check on plant operation is available at all times. Particular attention is given to the use of multipoint thermocouple-type of temperature recorders and indicators. At low temperatures these units have been very satisfactory.

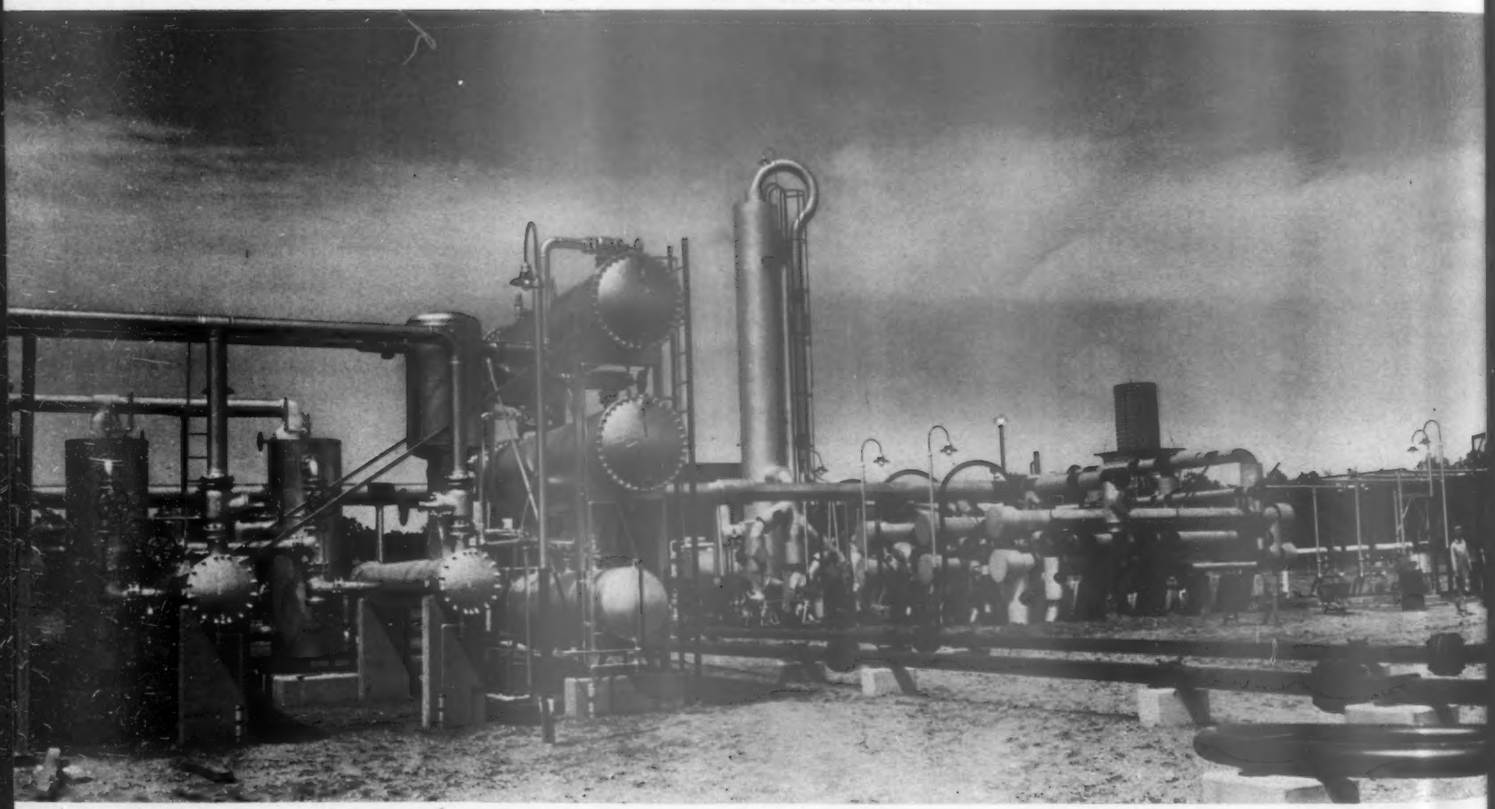
The problem of controlling liquid levels, high pressures, and pressure changes has been worked out successfully by control manufacturers. It is

(Continued on Page 72)

Heat exchanger and cooling units at Long Lake plant



Thanks for Cayuga No. 2 . . . . . we are deeply gratified that customers of long standing continue to place confidence in our ability to build economically and satisfactorily.



FRICK-REID

Camera Studies Of the Plants

Above: Seven 150-hp., 250-lb. steam boilers serve the plant with power and process steam. The equipment in background shows the compactness of design and space efficiency of the Long Lake plant

Below: Intake and discharge lines with recycling unit in background at Cayuga No. 2 plant

Ingersoll-Rand V-8 300-hp. compressors at Cayuga No. 2 plant

Clark angle-type, 400-hp. compressor engine operating refrigerating equipment at Cayuga No. 1 plant

Close-up of heat exchanger and tower at Cayuga No. 2 plant

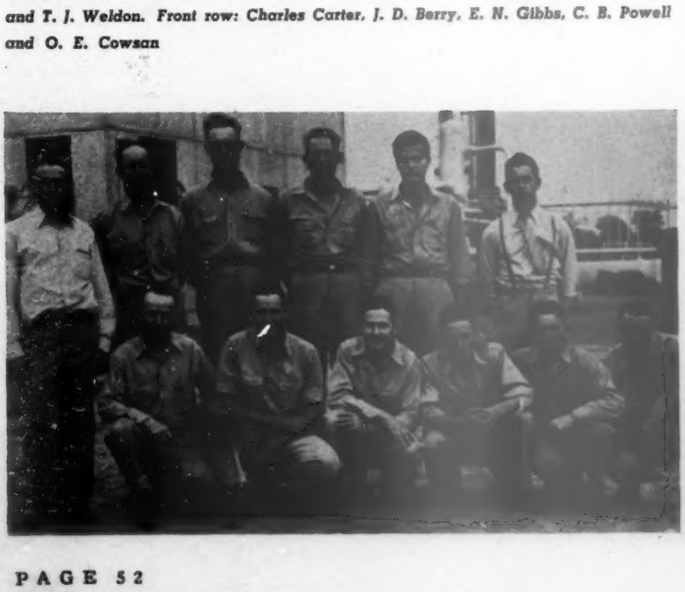
The Men Who Run the Plants

Top row: Jasper C. Dennis, assistant to the general superintendent; B. B. Athey, district chief clerk; C. H. Martin, plant foreman, Cayuga No. 1 plant; L. D. Phillips, district plant foreman. Second row: H. C. Williams, clerk, Long Lake plant; P. W. Turner, chief clerk, Long Lake plant. Extreme left: W. T. Bryant, inspector, field lines, Long Lake, Cayuga No. 1 and Cayuga No. 2 plants, during construction. Left: R. D. Morgan, inspector, Long Lake plant, during construction

Shown below is the operating force at Cayuga No. 1 plant. Back row: C. H. Martin, D. M. Davis, H. E. Rampy, A. A. Duncan, C. L. Hastings and C. O. Miller. Front row: G. E. Couchman, E. A. Shields, W. W. Watts, N. H. Oleson, T. A. Riddlesperger and W. M. Funderburk

At lower right is the operating force of Cayuga No. 2 plant. Back row: H. L. Andrews, R. E. Drennan, J. W. Bercher, A. J. Norrell, L. J. Flanagan, H. T. Groves and T. J. Weldon. Front row: Charles Carter, J. D. Berry, E. N. Gibbs, C. B. Powell and O. E. Cowsan

Shown above are the men who operate the Long Lake plant. Back row: E. E. Mannas, C. W. Peacock, R. A. Herrington, B. C. Marshman, Clyde McCoy, N. S. Dallison, C. R. Payne, M. D. Temple, C. F. Locke, C. A. Moore, J. R. Mason and F. W. Chandler. Front row: O. F. Thornton, W. W. Harris, P. M. Bell, F. R. Farmer, G. M. Ballard, J. H. Fields, W. N. Shaver, A. M. Brown, W. R. Braly and H. V. Crawford



The compressor bank at the Long Lake plant comprises four 400-hp. angle-type compressors to handle processed gas for injection, and two 300-hp. angle-type ammonia compressors to serve the important refrigeration section

New Design Incorporated in Compressor Operation

By B. C. THIEL
The Cooper-Bessemer Corp.

THE gas at the Long Lake plant of the Tide Water Associated Oil Co. and Seaboard Oil Co. is received from the field at a pressure of 1900 lb. gage. It is fed through the process designed by William H. Vaughan and delivered to the gas compressors at a pressure of 1,600 lb. gage at an average temperature of 52° F.

The gas-compressing end of this plant consists of four units of the angle V type, with the power cylinders in a vertical V and the compressor cylinders lying horizontal. The four power cylinders are 14-in. bore and 14-in. stroke. The speed of the units is 300 r.p.m. The compressor cylinders have a bore of 5⅝ in. and a stroke of 14 in. They are single-acting, with the suction valve mounted in the piston. The advantage of this construction in high-pressure work is that the piston-rod packing is required to pack the suction pressure only, whereas in a double-acting cylinder the piston-rod packing must be deep enough to pack the discharge pressure. This adds to the friction losses of the piston rod and decreases the mechanical efficiency of the unit.

These cylinders have also a unique cylinder-head construction in that the inner cylinder head is the discharge valve. The center of this head contains the seat for the valve for the clearance pocket or bottle which is used for unloading the cylinder in case the operating pressure rises to a higher point than the cylinder is designed for.

Both the suction and discharge valves are of the ring-plate type. The seat of the suction valve in the piston is a false steel seat that can be replaced when worn or damaged by welding slugs, sand, or pipe scale when the plant is first started, which renders it unnecessary to replace the piston and saves operating expense should such accidents happen.

Arrangements can be made to use this same idea on the discharge valve and save the heat-treated Meehanite seat when starting the plant. This was done at this plant and it obviated replacement of the discharge-valve seats, which might have been damaged during the first few weeks of operation.

The cylinder wearing surface is a cast-iron removable liner, around which is shrunk a steel body. This steel body carries the inlet and outlet nozzles, both at the bottom, which facilitates the piping, there being no high-pressure piping overhead in the engine room. The space between the inner bore of the body, which supports the liner, and the outer shell of the body is used for the compressor cooling water. The ribs that tie the inner and outer shells together are slotted in such a manner that the cooling water makes three complete circuits around the cylinder in its course from the inlet to the outlet. Small vent holes at the top of these ribs, leading from one water section to the other, prevent the formation of gas or steam pockets that might retard the flow of the compressor cooling water.

Clearance Flexibility

Since the compressor is single-acting, a change in operating pressures from those first contemplated, either because of a change in design of the condensate-extraction plant or a change in well pressures, permits the piston to be moved 2 in. away from the head, thereby increasing the clearance in the cylinder to a maximum of 23 per cent. By increasing the clearance, higher suction and discharge pressures may be carried without the necessity of changing the liners.

As the horsepower required to operate a compressor cylinder is based directly upon the quantity of gas compressed, all other conditions remaining the same, the increase in clearance has no effect upon the horsepower required to compress a unit amount of gas. For example, if a compressor cylinder is designed so that it requires 25 hp. to compress gas from a stated suction pressure to a stated discharge pressure at a rate of 1,000,000 cu. ft. per day, measured at standard conditions, then the addition of clearance to this cylinder will decrease the rate of gas delivery from it and thereby decrease the horsepower required.

However, should the suction and discharge pressures change so this cylinder would require 30 hp. to deliver gas at the rate of 1,000,000 cu. ft. per day, measured at standard conditions, then it would be necessary to add clearance and thus reduce the cylinder's capacity until only 25 hp. is required under the new conditions. This statement is based on the assumption that the cylinder is to be operated with the power available, in accordance with the first set of pressure conditions. It can be seen that varying the clearance by merely adjusting the length of the piston rod is the simplest means of operating a compressor cylinder under changing pressure conditions.

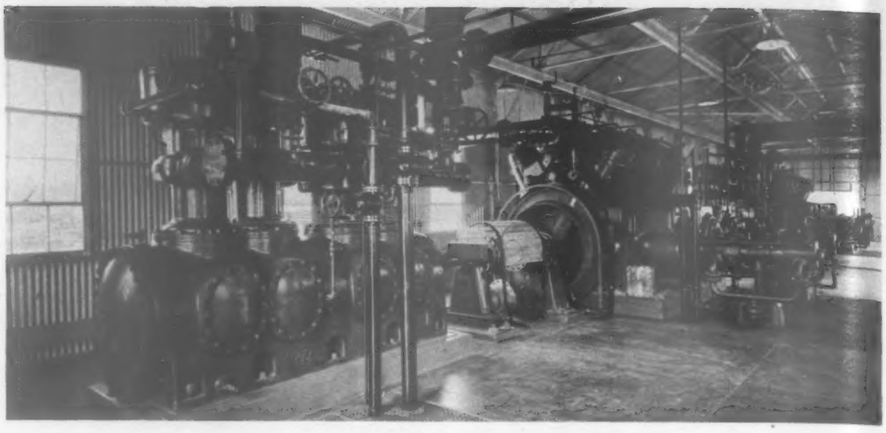
In these units the compressor crosshead also carries a light scavenging piston which compresses the air for scavenging the two-cycle power cylinders. The scavenging air is led into a common manifold, from which the individual cylinders re-

ceive their scavenging air. This tends to remove the pulsations caused by the scavenging pistons and produces a steadier flow of air to each individual cylinder.

The compressor-cylinder connecting rod is the master rod, the power rods being connected to it at its crank end. This makes the unit shorter than the one that has the connecting rods for both the power cylinders and compressor cylinders placed side by side on the same pin.

Power Pistons Air-Cooled

In order to keep as much of the heat in the exhaust line from heating the engine rooms, the exhaust manifolds are water-jacketed the full length of the engine. Only the short length of pipe from the manifold to the building wall will have temperatures of over 180° F. This assures a cooler engine room in the summer time.



Engine room of Cayuga No. 2 plant, showing Frick 4-cylinder ammonia machines driven by Cooper-Bessemer V-type compressors

The power pistons are oil-cooled, which allows the unit to carry greater loads than one with the ordinary noncooled power pistons when an overload is demanded of it.

The oil cooling of the power pistons performs another service and that is preventing the carbonizing of the lubricating oil in the piston-ring grooves and thereby sticking the piston ring, especially those at the top of the piston. This is done by the rapid removal of the heat from the power-piston walls by a constant flow of oil through the pocket in the crown of the power piston. This oil is the same oil as is used for lubricating the bearings and is cooled in the same oil cooler as the lubricating oil, which is increased in size to take care of the added load put on it.

The high-pressure directional-flow gas-injection valve in the power cylinders allows this unit to operate with four-cycle economy and deliver 70 per cent more power than a four-cycle engine of the same bore and stroke. The injection valve is so constructed that in the event the B.t.u. value of the gas changes, the ported valve can be adjusted to take care of this variation while the unit is running.

The four units in this plant will compress 42,960 M.c.f. in 24 hours with a suction pressure of 1,200-lb. gage and a discharge pressure of 2,150-lb. gage measured at 14.4 lb. sq. in. abs. and suction temperature. When the suction pressure is raised to 1,600 lb. gage the capacity of the plant is 73,200 M.c.f. each 24 hours measured at 14.4 lb. sq. in. abs. and suction temperature.

Angle-Type Gas Engines

In addition to the gas-engine-driven gas compressors this plant contains two angle-type gas engines direct-driving two-stage ammonia cylinders. These are also four-cylinder machines, both on the power and on the ammonia ends. The power cylinders are 12-in. bore and 14-in. stroke. They are oil-cooled and have the same type injection valve as the engines previously described. The ammonia cylinders, of which there are four mounted on each unit, consist of two low-pressure cylinders of 18½-in. bore and 14-in. stroke, and two high-pressure cylinders of 11½-in. bore and 14-in. stroke.

Each of these units is capable of producing 200 tons of refrigeration with a suction temperature of —15° F. or 21 lb. sq. in. abs. and a discharge pressure of 195-lb. gage.

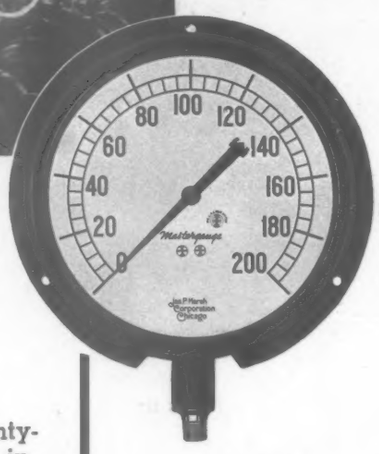
The refrigeration produced is used in processing the raw gases to remove the condensate.

The gas compressors are used to raise the stripped gases to a pressure high enough to allow the gas to enter the gas sands from which it came.

The above described installation has been laid out with great care, and safety devices have been installed to safeguard the operating personnel.

Marsh pressure gauges on centrifugal circulating pumps and natural gasoline plant.

It took MARSH experience to develop the *Mastergauge*



JAS. P. MARSH CORPORATION is seventy-five years young this year . . . and no inscription etched in bronze commemorating this anniversary could express the Marsh spirit more eloquently than the new Marsh Mastergauge.

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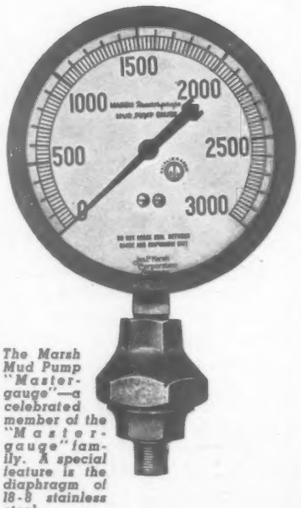

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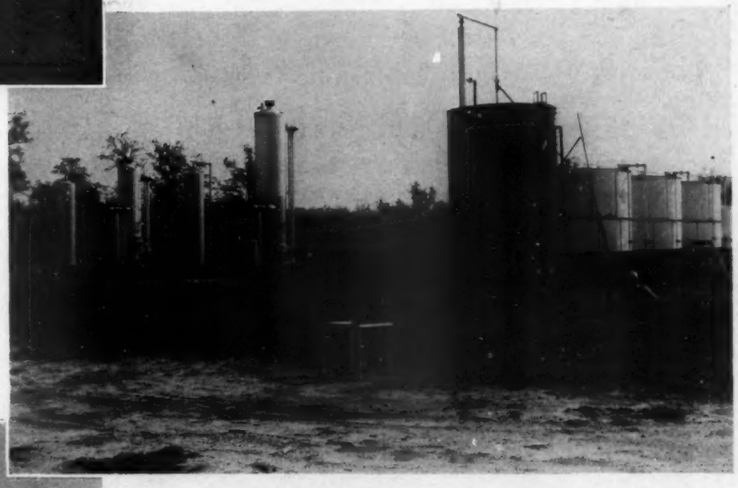
Field Operation Camera Studies

Extreme right: Typical recycling-well hookup in Long Lake field

Right: Curtin power-driven centrifuge, using natural gas as the driving medium. Note the safety protector case which the operators have around the centrifuge

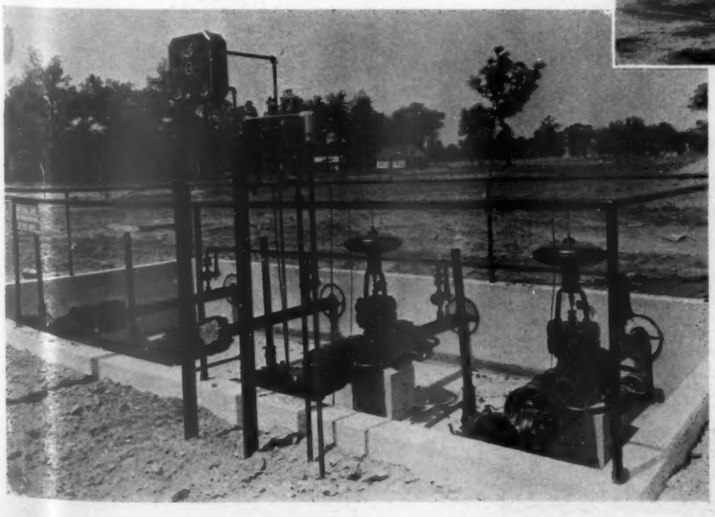
Below: Typical well manifold at tank battery, Long Lake area

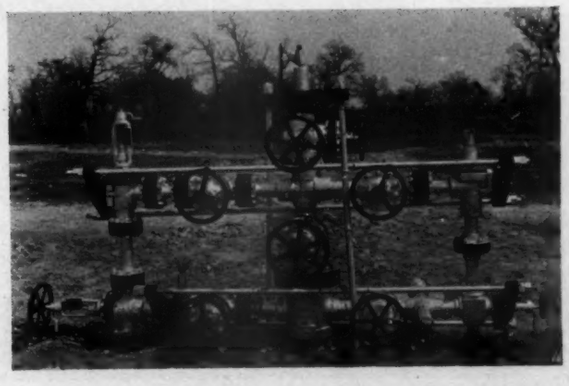
Right: Tank battery and high and low-stage separators, Long Lake field



Botton, right: Typical recycling-well hookup in the North Cayuga area

Below: Regulators in intake header at Cayuga No. 2 plant





General view of Cayuga No. 2 plant

Many New Features in Design of Cayuga No. 2 Recycling Plant

(Continued from Page 36)

position of the liquid and vapor phases after the low-pressure flash.

Sufficient cooling capacity remains in the liquid after leaving the low-pressure flash tank and inter-flash tank exchanger so that by means of a second exchanger this same liquid may be used to cool the liquid ammonia stream on its way to the chillers. Any heat removed from the ammonia at this point means an equivalent saving in refrigeration and a corresponding reduction in compressor horsepower required for refrigeration.

Ammonia System

In this plant the ammonia is subcooled to approximately 10° F. by heat exchange with the low-pressure flash-tank product. Since 5,600 lb. of ammonia is used per hour in the chillers, there is a saving of 518,000 B.t.u. per hour of refrigeration, or approximately 70 hp. of compressors.

At the Long Lake and Cayuga No. 1 plants the liquid from the high-pressure flash tank is sent to a preliminary fractionator, and the low-pressure flashing operation is omitted. Since cooling for the reflux condenser of the preliminary fractionator must be accomplished by heat exchange between the condensing reflux and the cold feed, it is obvious that this same cooling effect can not be utilized to subcool the liquid ammonia on the way to the chillers. Some heat is removed from the liquid ammonia by heat exchange with the liquid from the high-pressure flash tank, but most of the heat is removed by means of the interstage flash cooler.

This type of subcooling is more or less standard in two-stage compression refrigeration systems. It consists primarily in passing the liquid ammonia stream through a coil immersed in a tank of boiling liquid ammonia. The pressure and corresponding temperature of the boiling ammonia in this tank depend on the interstage pressure, for this tank "rides" directly on the interstage stream, and ammonia evaporated in the tank passes through the high-stage compressor only.

The advantage of this system of subcooling over that of merely allowing the refrigerant to cool itself by its own evaporation as it passes through the expansion valve is apparent if we consider the work involved per B.t.u. of subcooling in the two schemes. If we neglect the relatively small difference in latent heats of ammonia at the suction and interstage pressures, it will be seen that any given quantity of refrigeration produced by the evaporation of ammonia at the interstage pressure may be obtained by compressing the vapor through only one stage, while the same quantity of heat removed at the pressure of the low-stage suction necessitates compression of the vapor through two stages. We may conclude that the work required per B.t.u. removed is approximately half as great if heat can be removed by evaporation of ammonia at the interstage pressure.

Except for this difference in the method of subcooling, the refrigeration system is essentially the same in all three of the Tide Water-Seaboard plants. Ammonia vapor from the chillers is drawn into the low-stage cylinder, compressed to approximately 55-lb. gage and 160° F. The vapor then passes through a shell-and-tube water intercooler, where it is cooled to 85° F. If the flash intercooler, as described above, is used, the main stream of ammonia vapor passes across the upper part of the flash intercooler tank, where it is joined by ammonia evaporated from the flash intercooler. The combined vapor enters the high-stage suction, where it is compressed to approximately 185 lb. per sq. in. gage. This vapor then passes through the water-cooled shell-and-tube condenser, where the ammonia returns to a liquid state at about 92°

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F. This liquid ammonia passes to a central receiver, which acts as a surge tank for the system. Ammonia leaving this surge tank is then subcooled by heat exchange in the flash intercooler and further cooled by heat exchange with liquid from the flash tanks. At Cayuga No. 2 the latter method of subcooling alone is sufficient. In either case the ammonia is reduced to about 10° F. before entering the expansion valve to the chillers, which operate at about —15° F.

It will be noted that in the various refrigeration steps the fully flooded ammonia evaporation system is used. The tubes containing the medium to be cooled are completely immersed in boiling ammonia. Surprisingly high heat-transfer rates are experienced in the ammonia high-pressure gas chillers. The latter exhibits heat-transfer characteristic approaching those of light liquids.

Hydrate Control

The $CaCl_2$ brine-circulating systems used in the prevention of hydrate formation differs somewhat from that used in the two earlier plants. The base of the main accumulator serves as the main reservoir for the $CaCl_2$ solution. Two brine streams leave the base of the accumulator. One passes to the suction of each of three reciprocating brine pumps. Each pump discharges a stream of brine to a point where the rich gas enters the exchangers. From this point brine and gas travel together until they are finally separated in main accumulator.

The second stream leaving the base of the accumulator is controlled by means of an interphase liquid-level controller operating on the level between the brine and distillate in the accumulator. The released brine passes through a heat exchanger and thence to the reconcentrator, which operates at practically atmospheric pressure.

The reconcentrator consists of a low-pressure tank, 5 ft. in diameter and 8 ft. high. Steam coils in the bottom of the reconcentrator, fed with steam controlled by a temperature recorder-controller, maintain the brine at a constant temperature of about 190° F. during the concentrating process. The brine concentration is controlled by means of a submersed cylinder approximately 6 in. in diameter and 48 in. long.

Variations in the buoyancy of this cylinder actuate an air-pilot mechanism, similar to that used in the elongated-type liquid-level controls. This air pilot controls a motor valve, which in turn controls the rate at which stripping gas is expelled through a perforated spider in the bottom of the concentrator tank. The rate of evaporation of excess water from the brine solution is mainly a function of the rate at which the stripping gas is bubbled through the solution.

The cooling tower used in the plant is of the Pritchard forced-draft type. The tower is divided into two cells, air being forced through each cell with a turbine-driven fan. The fans are six-bladed and 11 ft. in diameter. They are driven through a Falk gear-reducer by means of a steam turbine operated at 2,520 r.p.m. Each has a capacity of 135,000 cu. ft. per minute at 280 r.p.m.

Gas-engine compressors used in this plant consist of two Cooper-Bessemer 600-hp. V-type units with six 14-in. power cylinders and two 4½-in. compressor cylinders. In addition to compressing the gas for return to the field, each of these two engines is used to drive a Frick vertical four-cylinder ammonia compressor. Each ammonia compressor has two 17-in. low-stage cylinders and two 12-in. high-stage cylinders. The ammonia compressors are direct-connected to the two 600-hp. Cooper-Bessemer units.

There is in addition to the compressor units described above, one other Cooper-Bessemer gas-engine-driven compressor 400-hp. U-type unit, equipped with two 4⅞-in. compressor cylinders, which are used to compress gas for return to the field.

The entire plant, with exception of the field gathering system, was erected by the Frick-Reid Supply Corp.

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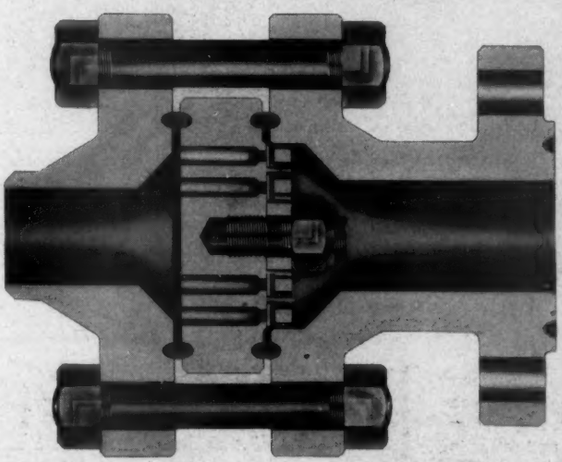

The Abercrombie Type B Water Check Valve, pictured above in suction line service for Tide Water-Seaboard's East Texas recycling plants, is filling an important place here and in other high pressure recycling and pressure maintenance plant lines where violent pressure fluctuations occur . . . where a check valve with extremely light moving parts is necessary. This valve definitely will not pound itself out on a single machine, or on single-acting cylinder installations. It is built to 8,000- or 10,000-pound test, and employs API Series 1500 or Series 2500 flanges of the ring joint type. Companion flanges to fit any condition are also available. The valve has full opening seats and is available in sizes up to 8⅝" O. D. line.

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Correct Well Completion and Design of Gathering Systems Important in Recycling

By GEORGE WEBER

Left: Meter runs in the field lines are placed downstream from drip vessels on both producing and injection lines. The latter type is installed with a check valve below the meter run. High-pressure, orifice-type meters are used to measure volumes of all field gas. Right: An injection well in the Cayuga No. 1 plant field system

THE field system which serves the Long Lake recycling plant in eastern Texas was designed from a study of input and producing-well performances and high-pressure gas flow. It is essentially similar to those systems connecting the two Cayuga plants to field wells.

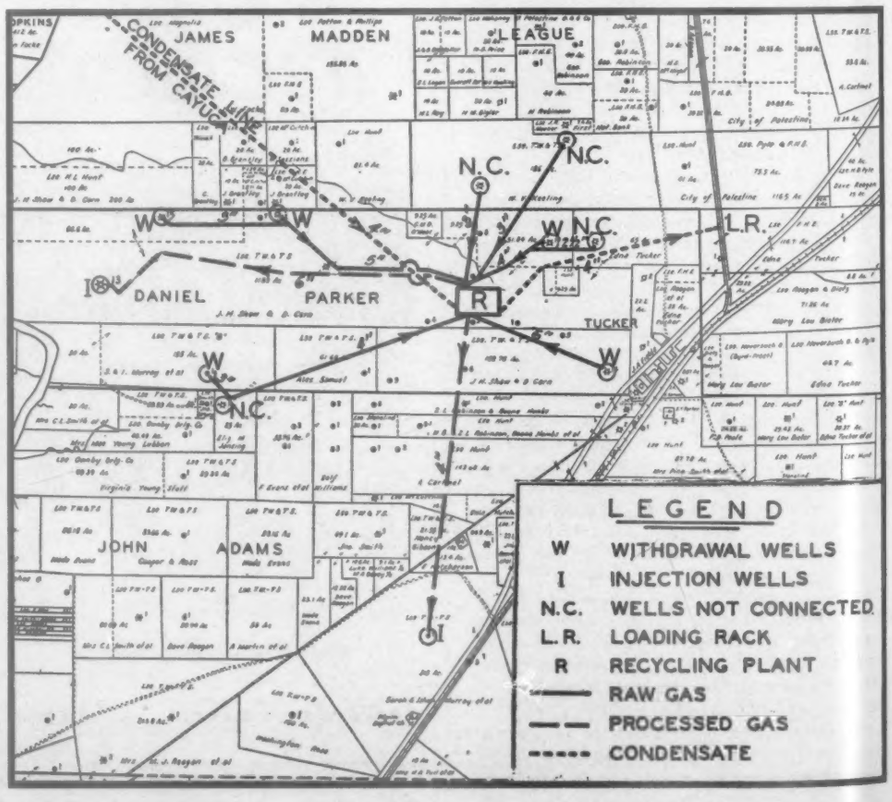
Producing wells are equipped in such a manner as to supply gas under its maximum delivery pressure. The system of lines for collecting wet gas from withdrawal or producing wells and returning processed gas to the formation consists of direct lines from each well to header arrangements located near the outer limits of the plant yard. From this junction the diameter of the lines is increased and they are brought into the plant yard through two high-pressure piping concrete pits located on the north and south sides of the processing area.

Each pit has two input lines passing through it, connected by means of Y connections to a large-diameter intake and discharge header extending across the yard from south to north. The two headers are arranged for the distribution of gas to be processed and receipt of the gas for injection.

The gathering system is designed for a working pressure of 2,500 lb. per sq. in., and the various lines are of sufficient diameters to transmit gas to the plant with a nominal pressure drop through the system. Well-head pressure is maintained on intake lines to the plant.

Well Connections

At the input wells the field system is connected to the christmas tree so that gas may be injected through the casing. A high-pressure check valve is placed in line just ahead of the well-head connection. The meter which records the volume of gas injected into the well is installed on a meter run located approximately 35 ft. upstream from the high-pressure check valve, and a scrubber or



Field plan at Long Lake. Although lines are laid to nine wells in addition to the two input wells, only five are connected into the system at the present time

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Photo shows 3 Donovan 150 H.P. 250 lb. A.S.M.E. Code, domeless oil field boilers in service in Tide Water-Seaboard Companies' Cayuga No. 2 Plant. This installation illustrates the ready adaptability of Donovan Boilers wherever steam is required.

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drip vessel is placed in the line on the upstream side of the meter run. This vessel consists of a cylinder 10 ft. long and six times the diameter of the connected pipe line, installed with high-pressure flange connections of Series 1500 strength. The field lines leading from the drip are fabricated bends installed in a manner to care for expansion and contraction of the pipe.

Lines connecting withdrawal wells differ from input lines in that no check valve is used at the well connections, and drip vessels and meter runs are reversed with respect to well locations, remaining in the same flow order as on input lines.

Type of Equipment

Meters used for both input and withdrawal volume measurements are of the high-pressure orifice type, equipped with 4,000-lb. springs, 100-in. differential and 24-hour clocks. Grade B pipe Schedule 120, with a 20° beveled end, was used at Long Lake for the welded lines. At Cayuga Schedule 80 pipe was used. All lines were laid with a three-bead acetylene weld. Series 1500 fittings, including lubricated plug-type valves, were used throughout the system. All pipe bends, Y's, tees, meter runs and other line installations were shop-fabricated and installed into the system by welding or flange connections. After completion the entire system was tested hydraulically to 2,500 lb. per sq. in.

As a protection against corrosion all buried lines received a thick coat of high-melting-point plastic pipe coating and were wrapped with an impregnated fabric cellophane wrapper. The coating was applied by hand, using the sling method. Lines to be buried were placed in a ditch and covered with 35 in. of soil.

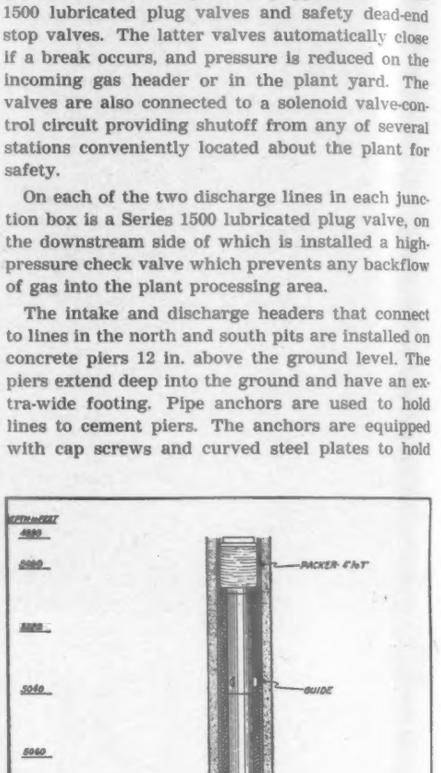
Concrete Piping Pits

The north and south concrete boxes, or high-pressure piping pits, deserve comment. These pits are 21 ft. long, 11 ft. wide and 3 ft. deep. The walls of reinforced concrete are 12 in. thick, and the bottom of the pit has a 5-in. mesh-reinforced concrete flooring. A bell drain in one corner of each pit connects to a sewer, keeping the pit free of water, and the bottom is laid with a slope to the drain.

Four circular openings on each side of the pit are provided for lines connecting to the headers. Concrete plugs packed with oakum around the pipes and finished with cement make a neat installation. Atop the walls a 1-in. pipe railing 36 in. high extends around each pit. The two incoming gas lines inside each pit are equipped with Series 1500 lubricated plug valves and safety dead-end stop valves. The latter valves automatically close if a break occurs, and pressure is reduced on the incoming gas header or in the plant yard. The valves are also connected to a solenoid valve-control circuit providing shutoff from any of several stations conveniently located about the plant for safety.

On each of the two discharge lines in each junction box is a Series 1500 lubricated plug valve, on the downstream side of which is installed a high-pressure check valve which prevents any backflow of gas into the plant processing area.

The intake and discharge headers that connect to lines in the north and south pits are installed on concrete piers 12 in. above the ground level. The piers extend deep into the ground and have an extra-wide footing. Pipe anchors are used to hold lines to cement piers. The anchors are equipped with cap screws and curved steel plates to hold



Gravel-pack diagram for the Tide Water Associated-Seaboard No. 13 Shaw & Cern, input well at Long Lake. Tell-tale screens were set at 5,075 ft. and 5,110 ft.

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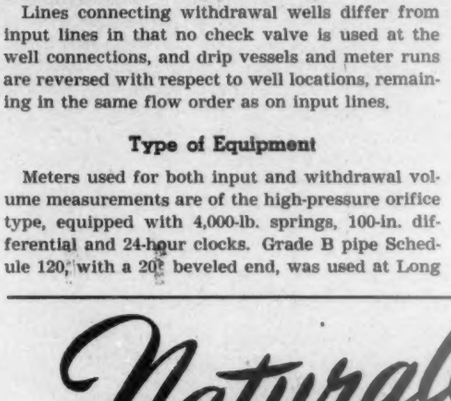

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the lines, but only tightened sufficiently to permit adjustments of expansion and contraction movements of the pipe.

On the discharge header just ahead of the Y connections at the pits the conventional pipe loops for expansion and contraction are provided. Each shop-fabricated loop is placed in a horizontal position, well anchored to concrete blocks with flat-type pipe clamps permitting limited movement in any direction.

Meters and meter-run piping in the field are enclosed by a heavy-mesh wire fence topped with barbed wire, and all meters are protected by trainshed covers. Series 1500 A.P.I. standard ring-joint flange connections were included as standard specifications for all pipe and fitting connections. Allowance for expansion and contraction of buried pipe received consideration. Coupons of welders' work were taken and tested, and inspection was continuous during construction.

Well Conditions

The accompanying table shows operating pressures and temperatures at well heads in the Long Lake and Cayuga No. 1 systems. Conditions at

GAS WELLS CONNECTED TO LONG LAKE RECYCLING PLANT NO. 1—WOODBINE SAND, DEPTH 5,300 FT.

Wells—	Well-head pres. (lb.)	Temp. °F.
Withdrawal wells—		
Shaw & Cern, No. 10	2,000	134
Shaw & Cern, No. 11	1,980	134
Shaw & Cern, No. 12	2,000	131
Shaw & Cern, No. 14	2,000	134
Shaw & Cern, No. 15	1,910	124
S. & I. Murray, B-1	1,900	130
Injection wells—		
Shaw & Cern, No. 13	2,298	102
S. & I. Murray, A-1	2,395	90

GAS WELLS CONNECTED TO CAYUGA RECYCLING PLANT NO. 1—WOODBINE SAND, DEPTH 4,000 FT.

Wells—	Well-head pres. (lb.)	Temp. °F.
Withdrawal wells—		
H. R. Ramy, No. 1	1,475	128
J. A. Campbell, No. 2	1,440	130
C. H. Lutterloh, No. 5	1,410	116
W. H. C. Goode, No. 1	1,475	126
M. H. Sullenberger, No. 3	1,470	124
Injection wells—		
H. R. Ramy, No. 2	1,520	92
J. A. Campbell, No. 5	1,550	98
C. H. Lutterloh, No. 6	1,520	96
W. H. C. Goode, No. 8	1,575	84
M. H. Sullenberger, No. 5	1,600	98

wells in the Cayuga No. 2 plant system were similar to those shown for the No. 1 system.

Well-Completion Methods

In order to assure large capacity in both producing and injection wells, underreaming and gravel packing is being adopted in gas wells included in recycling systems. As an example of the work in Long Lake and Cayuga, the Tide Water Associated-Seaboard No. 13 Shaw & Cern, an injection well, may be cited as representative.

The need of a large-capacity injection gas well in the Woodbine sand prompted the drilling and completing of the well as an underreamed and gravel-packed well. The well was drilled into 91 ft. of Woodbine gas sand section which was composed of two sands separated by a 20-ft. shale break. An accompanying drawing shows a cross-section of the gas-producing zone and the section gravel-packed.

After drilling the gas sand with a 9⅞-in. hole the section from 5,60-5,265 ft. was underreamed to 12 in., and further underreamed to 16 in. Screen was set from the top of the first gas sand to the bottom of the second gas sand with blank liner above, then gravel-packed with ⅛-in. gravel and sealed off on top of the liner with a packer. Tubing was then run to the top of the liner and the well was washed in.

After producing for a sufficient time to clean all drilling fluid from the sand face, a potential test was made, which indicated an absolute open flow of 1,640,000,000 cu. ft. per day, or about three times the potential of a conventional well. The following table shows the casing program of the completed well:

CASING, LINER, SCREEN, AND TUBING RECORD

Size (O.D)	Weight (lb.)	Set at (ft.)	No. sacks
16 inch	43	283	675
10¾ inch	40.5	2,122	550
7 inch	26	5,156	660
2⅞ inch	6.5	4,982	...
4 inch	11	screen 90	
4 inch	1.6	blank liner 200	

Field Plan

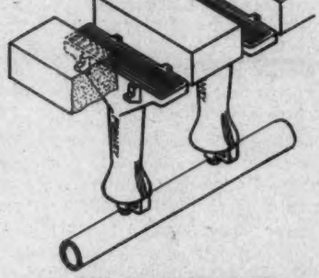
The map shows a plan of the field system which serves the Long Lake plant. The solid lines show the plant system laid out for production from nine withdrawal wells, of which only five are connected at present. Injection takes place in two wells under current operations, No. 13 Shaw & Cern to the west, and No. 1 Murray to the south. These withdrawal and injection wells are placed to provide the best possible sweep of recycled gas through the affected section of the reservoir. The structure of the Woodbine sand at Long Lake is too irregular to facilitate a regular field plan as suggested in regular anticlinal structures. Dashed lines represent injection lines from the plant.

The dotted line entering the plant processing area from the northwest is the condensate line from the two Cayuga plants, which brings raw condensate for rerunning in the Long Lake plant. The dotted line leaving the plant to the east serves the 22-car loading racks on the I. & G. N. Railroad.

FORNEY BURNERS

USED BY THE TIDE WATER ASSOCIATED AND SEABOARD OIL COMPANIES AT THEIR LONG LAKE PLANT

Boiler room at Long Lake showing 7-150 h.p. oil field type boilers each developing 225 h.p. with 27 BV units per boiler.



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History of the Operations

IN October 1936, the Tide Water Associated Oil Co. sent William H. Vaughan, at that time in charge of the company's natural-gasoline plant, drilling, and production operations in the Rodessa area, into the Long Lake and Cayuga territory of eastern Texas to make a survey of the possibilities for conventional natural-gasoline plants there.

Mr. Vaughan, having had experience with high-pressure gas and distillate wells since the development of the Trinity formation in the Pine Island field in North Louisiana territory and with this type of gas production in the Gulf Coast and Rodessa areas, saw immediately the place for recycling operations at Long Lake and Cayuga. He had spent time, effort, and money developing a process for extraction of liquefied hydrocarbons from this type of gas production without dropping the pressure to a point beyond economic limits for returning the gas to the formation. The process recognized the peculiar behavior of various hydrocarbon mixtures under high pressure.

Having found that condensation decreased as the pressure rose beyond certain limits under the same temperature conditions, and that it increased with lowered pressure under certain conditions, he set out to find causes and to develop a commercial process of extraction.

At that time little was known or recorded about heat exchange, absorption, retrograde condensation or vaporization or gas injection for pressure maintenance, in connection with high pressures such as were encountered. After study of the possible processing of the gas and returning it to the formation with a minimum requirement of horsepower and investment in general, Mr. Vaughan associated his observations with the phenomena now known as retrograde condensation and retrograde vaporization, terms which only recently have become common to the industry.

A rather limited survey of the Cayuga and Long Lake fields showed the possibility of successful operation of his process due to the large reservoirs under joint ownership of the Tide Water Associated Oil Co. and Seaboard Oil Co. of Delaware.

Need for Process

The need for such a process in these areas was obvious because of the volume of condensate that might be lost as a result of condensation in the gas horizon following gradual dissipation of the pressure over a period of years. Pressure decline was following production of gas for marketing facilities and production of oil from the same general formation.

Mr. Vaughan made a report of the situation to the two companies and pointed out the commercial possibilities of his process. He was authorized to proceed with experiments, a thorough investigation of possibilities from the standpoint of recovery of the product, the practicability of processing and returning the gas to the formation, and other integral parts of the operation, which were of high importance to the companies interested.

In the same year a small pilot plant was moved into the Cayuga and Long Lake areas. With this it was possible to determine the results obtainable from a larger plant.

Gas was processed with the miniature plant by using pressure control for temperature drop resulting from expansion and employing dry ice for refrigeration to obtain temperatures below that resulting from the Joules-Thompson effect of expansion of the gas. After successful tests and experiments had been made with Long Lake and Cayuga gas an estimate of commercial plant investment, probable recovery, and practicability of injection of gas into the formation was drawn up. Some actual extraction and injection operations were carried out on a semicommercial basis by taking the gas from the Trinity horizon, passing it through part of the process and injecting the residue gas into the Woodbine horizon for a number of months. The companies then authorized the installation of a small commercial unit, consisting of a 400-hp. engine compressor equipped with cylinders for both ammonia refrigeration and gas compression, with coolers, heat exchangers, chillers, separators, flash drums, storage, etc., to test out and establish definitely that the process could be operated on a commercial basis. From this start the three-plant operation described in this section was evolved.

THE COVER

The illustration on the cover of this section, on Page 33, is a night view of the Long Lake plant. The plant is well lighted at night with a system of flood and unit lights served by a steam-turbine generator. Flanking the walk to the right in the photograph are the accumulators in the recycling-extraction cycle of the plant.

●

Low-Temperature, High-Pressure Condensate Extraction

(Continued from Page 41)

procedure. One of the main difficulties in testing high-pressure gas for condensate content is to obtain a representative sample of the gas stream. This problem has been solved by using a specially built sampling device. The sampler, built originally by Mr. Kimmell, of Black, Sivalls & Bryson, Inc., was modified to take small samples for charcoal test. The sampler has been checked by our engineers on several wells by measuring the condensate separated per 1,000 cu. ft. in the field separator against the condensate separated in the test separator. The yields checked, indicating that the sampler was removing a representative sample of the well stream.

The sampling device consists of a ¼-in. internal diameter sectional-steel sampling tube with a steel-spring spider to hold the sampling tube in the center of the tubing. The sampling tube is forced down into the well tubing with a sample tube jack fitted with ball-bearing slips designed to operate at a maximum pressure of 4,000 lb. The sample tube is forced down into the well tubing until its tip has passed below all takeoffs, chokes, shoulders, or other obstructions. A sharp-edged, streamlined nipple attached to the end of the sample tube takes a continuous streamlined flow sample at a point below where turbulence occurs in the well head. The size of the nipple is chosen so that the ratio of its area to the area of the tubing is in the same proportion as the ratio of the flow of the charcoal meter is to the flow of the well. This provides equal velocities through the sampler and tubing, assuring a representative sample of gas.

The expansion valve is immersed in a hot glycerin bath so that the sampling rate can be held constant. To avoid losing condensate in the meter the gas is passed directly from the expansion valve into the charcoal tube. The residue gas from the charcoal tube is measured in the meter and the volume corrected for temperature and the shrinkage due to removing the condensate. The distillation of the charcoal is run in accordance with code No. 101.

The average of 14 tests on the Long Lake gas shows a charcoal content of 0.985 g.p.m. None of the tests vary more than 0.05 g.p.m. from the average. The average of tests checks within 0.075 g.p.m. of the pentane plus content of the green gas as shown by the low-temperature analysis. The green-gas composition was determined by taking a sample of the liquid and gas from a separator. The green-gas composition then was calculated from the low-temperature analysis of the two samples and the liquid-gas ratio in the field separator.

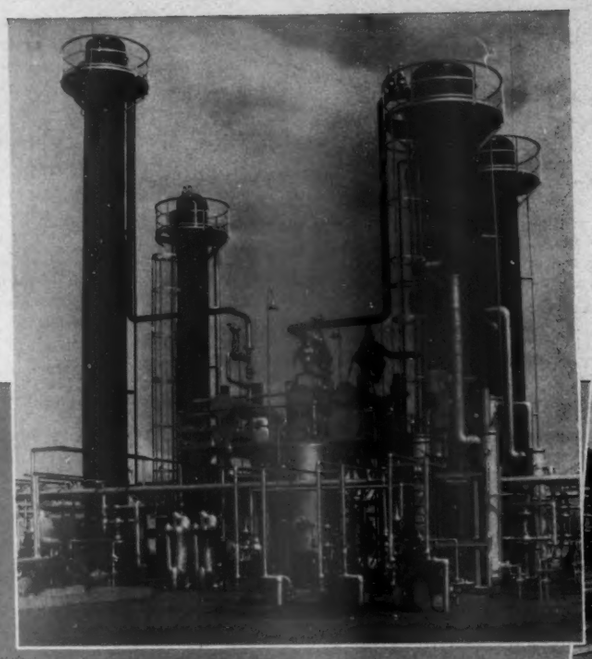
Finishing Products

The product at the Long Lake plant has an initial boiling point within the natural-gasoline range and an end point above that of the motor-fuel range. The condensate production is fractionated for complete elimination of methane and ethane, and stabilized, for a propane-free product, as a composite stream. After being properly stabilized, if not marketed as a composite product, it is delivered to the rerun still for cutting such products as the market may demand.

In this operation the low-boiling hydrocarbons are delivered overhead for total condensation and control of the vapor pressure and end point, and other characteristics of a natural or motor gasoline. The rerun still bottoms can be marketed as such or refined as desired. The accompanying flow chart traces the finishing steps of Long Lake condensate through fractionation, stabilization and rerunning. A second rerun column finishes Cayuga products.

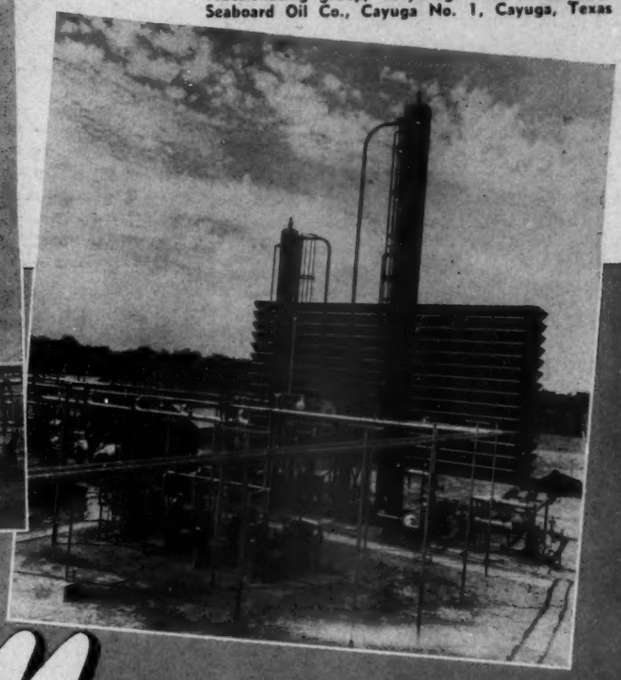
The products that can be produced from the Long Lake gas are of the characteristics as shown in the following table.

	Composite condensate produced	Natural gasoline				Motor gasoline		Kerosene
		Cut	Cut	Cut	Cut	Cut	Blended	cut
Oct. No., A.S.T.M.-C.F.R. motor method	70	84	79	...	...	55	50.5	...
Gravity, A.P.I. at 60° F.	72	91	86	82.5	72.4	67	63.8	43.4
Color, Saybolt	30	30	30	30	30	30	30	30
Doctor test	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.
Corrosion, 3 hrs. at 122° F.	Passes	Passes	Passes	Passes	Passes	Passes	Passes	Passes
Odor	Good	Good	Good	Good	Good	Good	Good	Good
Sulfur, A.S.T.M., per cent	.01	...	...	...	...	...	...	0.03
Vapor pressure, received at 100° F., lb.	18	26	22	18	14	7.3	7.2	...
A.S.T.M. distillation:								
Initial boiling point, °F.	70	58	67	76	86	102	100	397
10 per cent recovered	94	68	78	87	111	138	140	431
50 per cent recovered	206	108	126	133	190	212	250	448
90 per cent recovered	384	168	201	213	292	335	339	480
End point	454	210	258	257	362	392	400	514
Recovery, per cent	96	94	96	97	97	98	98	99
Residue, per cent	1.5	0.3	0.2	0.4	1.2	0.3	0.9	0.9
Loss, per cent	2.5	5.7	3.8	2.6	1.8	1.7	1.1	0.1
Evaporated at 100° F., per cent	16.5	50.2	35.8	25.6	...	...	...	...
Evaporated at 140° F., per cent	32	79.2	63.8	57.6	26.8	11	10	...
Recovered at 212° F., per cent	...	...	...	...	...	50	30	...
Recovered at 284° F., per cent	...	...	...	...	...	...	72	...



Fractionating and Rerun group. Recycling plant of Tide Water-Seaboard Oil Co., Long Lake, Texas.

Fractionating group, Recycling Plant, Tide Water Seaboard Oil Co., Cayuga No. 1, Cayuga, Texas



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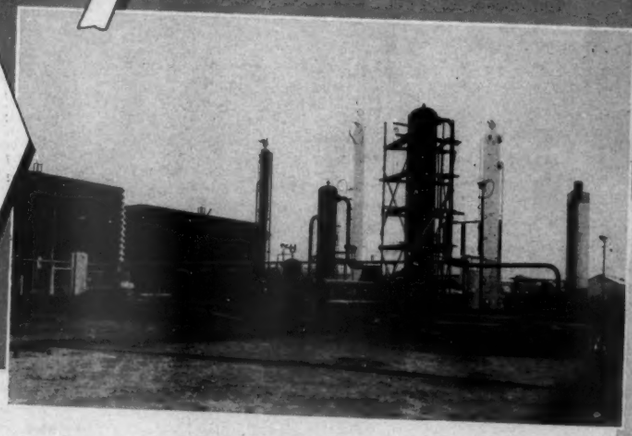
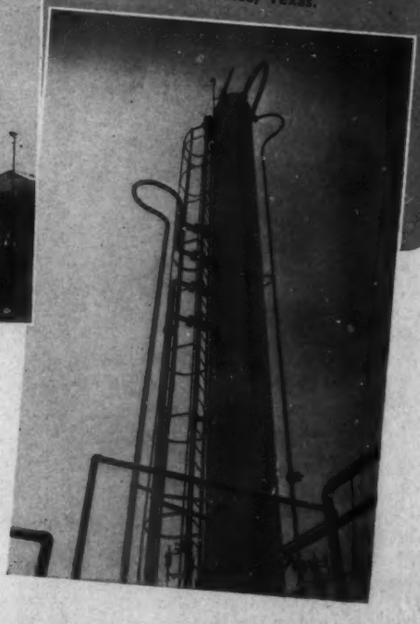


Recycling Plant, Lockhart Oil Co. of Texas, Agua Dulce, Texas.



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PLANTS IN
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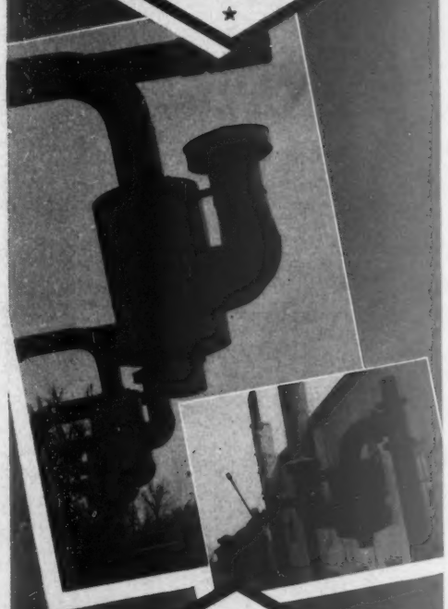

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Modern Equipment Meets Exacting Demands

(Continued from Page 47)

possible to obtain rugged accurate instruments and controllers from several sources. The controls at Long Lake were well suited to the plant operation and perform satisfactorily.

A battery of 10 by 40 ft. gasoline storage tanks, 2,000 bbl. of bolted steel storage and two 5,000-bbl. Hortonspheroid tanks provides ample and flexible storage. A modern 16-car loading rack and a 6-car auxiliary rack are maintained about a mile from the plant, served through a loading pump and line.

All pressure vessels, tankage, and operating units are provided with safety valves and safety heads. Automatic remote-controlled shutoff valves have been provided with several operating stations within the plant so that in case of line or equipment failure, field lines can be shut off from the plant. Automatic high-pressure check valves on inlet and outlet lines offer further protection. Remote-controlled valves to shut off engines and boiler feed and to snuff fires under boilers are provided with convenient operating stations within the plant.

The Long Lake recycling plant is an outstanding unit with most interesting possibilities. Particular acknowledgment for the success of this plant should be paid to the foresight and cooperation of William H. Vaughan, in charge of recycling operations for Tide Water Associated-Seaboard, and inventor of the process enployed in this plant.

List of Equipment Used in the Plants

THE following is a list of the equipment used in three plants discussed in this section:

Compressors

Cayuga plant No. 1:
1 Ingersoll-Rand, 225-hp., Type 6 XVG
1 Ingersoll-Rand, 300-hp., Type 8 XVG
1 Clark Brothers, 400-hp., Type RA4

Long Lake plant:
4 Cooper-Bessemer, 400-hp., Type GMV4 angle 2-cycle
2 Cooper-Bessemer, 300-hp., Type GMR4 angle 2-cycle

Cayuga plant No. 2:
2 Cooper-Bessemer, 600-hp., Type GMV6
1 Cooper-Bessemer, 400-hp., Type GMV4

Other manufacturers who supplied equipment:

Plants

Abercrombie Pump Co., Houston, Tex.; check valves.
Allied Steel Products Corp., Tulsa; buildings.
American Bosch Corp., Springfield, Mass.; magnetos.
American Hair & Felt Co., Chicago; felt insulation.
Armstrong Cork Co., Pittsburgh, Pa.; insulation.
Armstrong Machine Works, Three Rivers, Mich.; steam traps.
Bartlett-Hayward Division, Koppers Co., Baltimore, Md.; flexible couplings.
Black, Sivalls & Bryson, Oklahoma City, Okla.; safety heads, vessels, tanks, separators, treaters.
Blaw-Knox Co., Blawknox, Pa.; tracyfier.
Bowser & Co., Inc., S. F., Fort Wayne, Ind.; oil meters.
Braden Steel Co., Tulsa; buildings.
Brown Instrument Co., Philadelphia, Pa.; control instruments.
Campbell Co., J. A., Los Angeles, Calif.; boiler-feed water regulators.
Century Electric Co., St. Louis, Mo.; electric motors.
Chicago Bridge & Iron Co., Chicago; spheroid tanks.
Coppus Engineering Corp., Worcester, Mass.; turbines.
Crane Co., Chicago; piping, valves and fittings.
Crosby Steam Gage & Valve Co., Boston, Mass.; relief valves.
Curtin Co., W. H., Houston, Tex.; centrifuges.
Daniel Orifice Fitting Co., Los Angeles, Calif.; orifice fittings.
Dillon Co., Tulsa; pipe couplings.
Donovan Boiler Works, Parkersburg, W. Va.; boilers.
Dresser Manufacturing Co., Bradford, Pa.; pipe couplings.
Eagle-Picher Sales Co., Cincinnati, Ohio; insulation.
Edward Valve & Manufacturing Co., Chicago; valves.
Engineering & Fabricators, Inc., Houston, Tex.; intercoolers, heat exchangers.
Elliott Co., Jeanette, Pa.; turbines and generators.
Everlasting Valve Co., Jersey City, N. J.; valves.
Fisher Governor Co., Marshalltown, Iowa; control equipment.
Forney Engineering Co., Dallas, Tex.; burners.
Frick Co., Waynesboro, Pa.; ammonia valves, fittings and machines.
Frick-Reid Supply Corp., Tulsa; piping, valves, fittings and pumps.
Gardner-Denver Co., Quincy, Ill.; air compressor.
Goulds Pump Co., Seneca Falls, N. Y.; pumps.
Griscom-Russell Co., New York City; exchangers and coolers.
Hanlon-Waters, Inc., Tulsa; control equipment.
Hughes Tool Co., Houston, Tex.; christmas trees and choke valves.
Illinois Testing Laboratory, Chicago; temperature controls.
Independent Materials Co., Tulsa; coloring for cement.
Jerguson Gage & Valve Co., Somerville, Mass.; high-pressure reflux gages.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.; pipe.
Kerotest Manufacturing Co., Pittsburgh, Pa.; valves.
Layne & Bowler, Inc., Memphis, Tenn.; water pumps.
Limbert Co., Geo. B., Chicago; pipe fabrication.
Linde Air Products Co., New York City; welding equipment.
Linear Packing & Rubber Co., Philadelphia, Pa.; gaskets.
Lucey Boiler Co., Chattanooga, Tenn.; boilers.
Madison Kipp Co., Madison, Wis.; lubricators.
Manning, Maxwell & Moore, Inc., Bridgeport, Conn.; gages.
Marsh Corp., James P., Chicago; gages.
Maxim Silencer Co., Hartford, Conn.; exhaust silencers.
McCord Radiator & Manufacturing Co., Detroit, Mich.; lubricators.
Merco Nordstrom Valve Co., Oakland, Calif.; plug valves.
Midwest Piping & Supply Co., St. Louis, Mo.; piping and weld ells.
National Tank Co., Tulsa; small tanks.
National Transit Pump & Machine Co., Oil City, Pa.; reciprocating pumps.
Norris Manufacturing Co., W. C., Tulsa; bull nipples.
Nugent & Co., Inc., Wm. W., Chicago; oiling systems.
Oil Center Tool Co., Houston, Tex.; christmas trees.
Patterson Steel Co., Tulsa; reinforcing steel.
Penberthy Injector Co., Detroit, Mich.; high-pressure reflex gages.
Petroleum Engineering, Inc., Tulsa; stabilization and rerun unit, exchangers.
Pickering Governor Co., Portland, Conn.; governors.
Pittsburgh Equitable Meter Co., Pittsburgh, Pa.; meters.
Pritchard & Co., J. F., Kansas City, Mo.; cooling tower.
Reading-Pratt & Cady, Bridgeport, Conn.; valves.
Refinery Castings Corp., Dallas, Tex.; bubble caps.
Ryerson & Son, Joseph T., Chicago; steel.
Shand & Jurs, Berkeley, Calif.; automatic tank gages and safety valves.
Taylor Forge & Pipe Works, Cicero, Ill.; fittings.
Tretolite Co., Dallas, Tex.; treating chemical.
Tulsa Boiler & Machinery Co., Tulsa; storage tanks.
Union Steam Pump Co., Battle Creek, Mich.; centrifugal pumps.
Vogt Machine Co., Henry, Louisville, Ky.; valves on boilers.
Vortox Manufacturing Co., Claremont, Calif.; air filters.
Walworth Co., New York City, valves and piping.
Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa.; transformers.
Worthington Pump & Machinery Corp., Harrison, N. J.; pumps.
Wyatt Metal & Boiler Works, Houston, Tex.; steel, vessels, rundown tanks.
Zink Co., John, Tulsa; burners.

Pressures of 2,700 lb. per sq. in. require not only extra heavy valves and connections but equipment to prevent freezing due to the expansion of the liquid as it passes through the choke into the flow line. One operator in the Cotton Valley, Louisiana, field uses a heater located close to the well head to minimize the temperature reduction

ENGINEERING & OPERATING

MAY 9, 1940

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Several different types of cementing jobs are being used in Illinois to seal the porous streaks in members of the Osage group before running casing in the deep Devonian wells.

PUMPING VISCOUS OILS WITH CENTRIFUGAL PUMPS
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A simplified method of predicting the performance of centrifugal pumps aids in the selection of pumps in situations where viscosity causes deviation from water-tested performances.

MECHANICAL ATOMIZATION OF FUEL OIL HEAVIER THAN BUNKER C
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SURFACE-CONTROLLED INTERMITTER UTILIZES STATIC FLUID COLUMN
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NOVEL CLEANOUT MACHINE ON A LARGE LEASE
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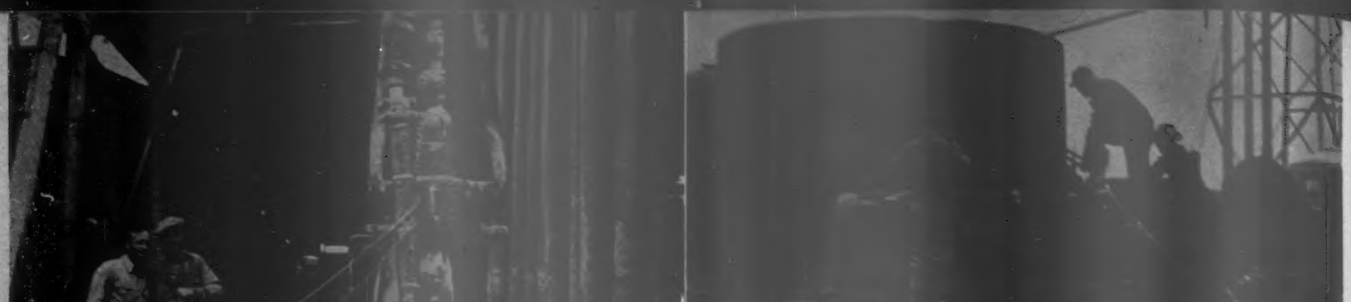


At left above, Lee Reeves, Parker Drilling Co. tool pusher, and driller watch while cement is being pumped into well on a two-stage cementing job. At right, the men are getting ready to displace part of the cement with a small batch of water preparatory to running plug which will open ports in multiple-stage cementing tool

DEVONIAN DRILLING

. . requires conditioning of mud while drilling and sealing of porous formations to run casing

By HARRY F. SIMONS

WHEN forecasts of deeper drilling for Devonian production in the Illinois basin were made it was admitted that such development would require larger rigs and a substantial increase in the time and number of bits required to drill each hole. The danger of sticking the drill stem would also be increased as the drilling got deeper and the life of the drill stem would be shortened due to prolonged contact with abrasive sands. One problem which was not anticipated was the effect porous formations would have on drilling costs and completion practices in the field.

So far the Salem field, which has the greatest Devonian production and the largest number of Devonian wells, is the one which presents the hardest problems to overcome. The obtaining of rigs heavy enough to drill to 3,440 ft. was not difficult as many of the power rigs which had been moved in from Kansas and the Mid-Continent, or purchased in Illinois, were designed for drilling to 4,000 ft. Some of these were at work in the Salem pool, drilling wells to the McClosky lime or the Chester sands at depths less than 2,000 ft.; the rigs had been revamped for competing for this type drilling and had to be put back in their original condition before they could adequately drill the deeper wells.

Required Drilling Time

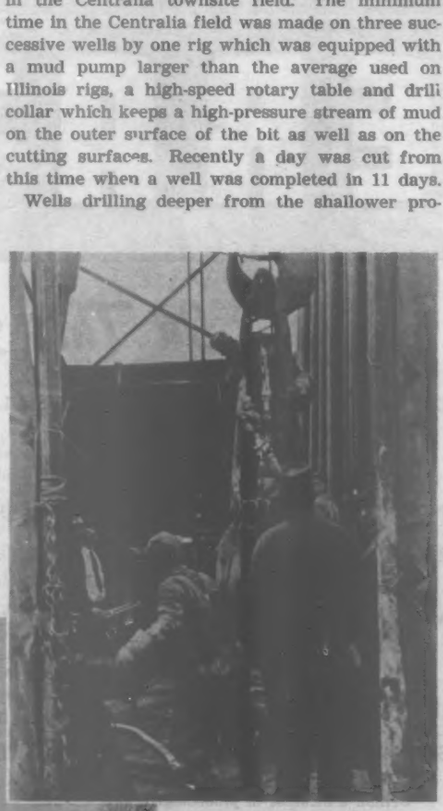
The time required to drill approximately 1,600 ft. of hole between the Benoist and the Devonian is approximately four times the time required to drill the 1,800 ft. from the surface to the Benoist. The experience in Illinois shows how rapidly drilling costs can mount when deeper drilling is attempted. The older wells in the field, which were drilled to the upper horizons, required from a week to 10 days to drill, including rigging up and tearing down; in some cases rigging up during bad weather took more time than the actual drilling. Drilling to the Devonian takes from 25 to 30 days in the Salem field and from 12 to 20 days in the Centralia townsite field. The minimum time in the Centralia field was made on three successive wells by one rig which was equipped with a mud pump larger than the average used on Illinois rigs, a high-speed rotary table and drill collar which keeps a high-pressure stream of mud on the outer surface of the bit as well as on the cutting surfaces. Recently a day was cut from this time when a well was completed in 11 days.

Wells drilling deeper from the shallower producing zones have a distinct advantage as the drill-pipe wear is reduced, rubber protectors on the drill pipe preventing damage to the upper part of the drill stem. The danger of sticking in the upper formations is also eliminated. The holes drilled are smaller as the old wells were equipped with 7-in. o.d. casing and 6¼-in. bits are generally selected for the lower drilling. The smaller hole increases the velocity of the drilling fluid from any given size pump and failure to pay close attention to mud-conditioning does not generally cause sticking of the pipe.

Difficult Formations

The formations which cause most of the increase in drilling time also cause the increase in pipe and bit wear. The productive horizons drill rapidly but the top of the Fredonia lime is very slow drilling. In the Centralia townsite pool, the McClosky is unproductive and slow progress is made through it. Below the McClosky, the hardest drilling in Illinois, with local exceptions, is found in the St. Louis lime; this formation is familiar to drillers in the Mid-Continent as the Mississippi lime. The St. Louis is a cherty, dark gray limestone and averages about 340 ft. in thickness in the Salem field. It drills at about 5 ft. per hour with a new bit and at about 2 ft. per hour with a bit about ready to pull from the hole. Twenty-five to 35 ft. per tour is the average footage reported.

Below the St. Louis lime, the Salem formation is encountered; it is buff-gray limestone which sometimes is quite sandy and is about 175 ft. thick. It can be drilled with two bits, the drilling time decreasing from about 10 ft. per hour when the bit is new to about 4 ft. per hour when the bit is ready for a replacement. Near the bottom of the Salem, a hard streak is encountered which reduces the drilling time, even with a new bit, substantially. The Osage group contains some shale but is mostly coarse grained or cherty limestone, is encountered at approximately 2,520 ft. in the Salem field and is about 500 ft. thick; except for a few spots, drilling time will not average over 5 ft. per hour. The drilling rate begins to increase with the encountering of the Fern Glen formation in the bottom of the lower



Left: Mechanical rig with two engines which can be compounded for drilling. Rig capacity is 4,500 ft.

Right: Following plug with wire-line measuring device to make sure it passes the multiple-stage cementing tool and opens the ports so cement can be forced behind upper part of pipe

Osage group and increases until the lower part of the Kinderhook group is reached. The top of the Devonian is quite hard and the drilling rate again decreases slightly.

The drilling of the predominantly limestone section below the Chester series increases the number of bits needed from the 3 to 6 used for drilling to the Benoist or Aux Vases to 18 to 30 for drilling to the Devonian; there have not been many holes made with the minimum number of bits. The slow drilling through the lower section provides ample time for the tool joints to come in contact with the upper sands which are sharp; if a joint of pipe is crooked, causing the tool joint to contact with the side of the hole, the tool joint may be worn so badly on one side that it will have to be replaced.

The major problem in drilling to the Devonian in Salem and other fields, is the prevention of the loss of mud into the formation and the sticking of the drill pipe while coming out of the hole. This calls for close supervision of the drilling fluid, a problem which did not bother Illinois drillers to any great extent while drilling to the upper pay zones. Most of the Illinois rigs are not equipped with large enough pumps or driving engines, the price at which they must operate preventing the purchase of heavy equipment. The rate of flow of the mud stream is dangerously reduced as the wells get deeper and the only remedy available to prevent sticking is the careful conditioning of the mud. Loss of mud into the formation is not affected by the fluid velocity but it is another problem which must be met by mud conditioning. Table 1 gives the capacity of various size pumps while Table 2 gives the horsepower required for various rates of flow.

Trouble from loss of circulation may be expected any time after the drilling of the Salem is completed. In some areas of the field, the tendency to lose circulation is greater than in others although in the best areas from 5 to 6 tons of

TABLE 1

Length of stroke	10	12	14	18
Largest size of liner	6¼	6¾	7¼	7¾
Normal speed range	40-60	40-60	40-60	40-55
Maximum working pressure of fluid cylinder	1,500	2,000	2,500	3,000
Gal./min. at normal speed and max. size liners	216-325	281-421	381-572	563-774

TABLE 2—HORSEPOWER REQUIRED FOR OPERATION OF SLUSH PUMPS*

Discharge pressure, lb./sq. in.	Rate of mud circulation in gal./min.						
	400	450	500	550	600	650	700
450	105	118	131	144	158	171	184
500	116	131	146	160	175	190	204
550	128	144	160	177	193	209	225
600	140	158	175	193	210	227	245
650	152	171	190	209	227	246	266
700	163	184	204	225	245	266	286
750	175	197	219	241	262	285	306

*Drilling Equipment Directory.

Aquagel are required. The areas where the tendency to lose circulation is greatest require from 10 to 12 tons of Aquagel. In addition, considerable quantities of fibered material are required to help plug up the pores in the formation so a filter cake will be built on the wall of the hole. The few contractors having vibrating screens for cleaning the mud, bypass them while using the fibered material.

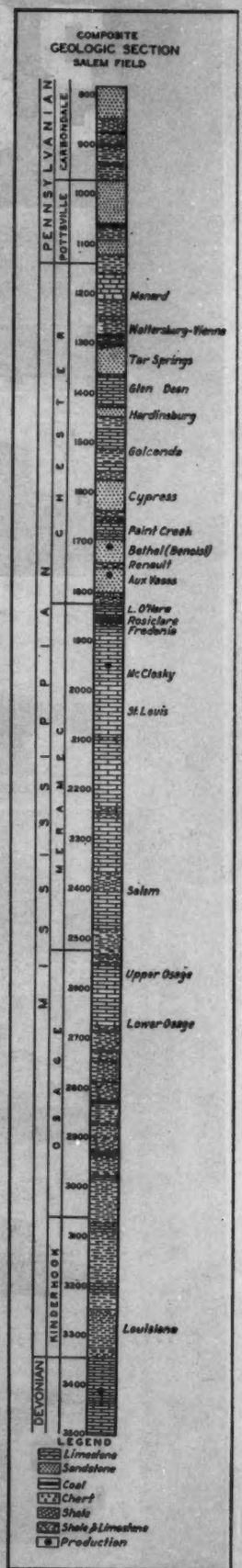
If the weight of the mud is kept below 10 lb. per gal. and the viscosity at 40 to 42 sec., little trouble is experienced except in the worst areas. There will be a slight loss of mud but not enough to impede the progress of the drilling. Increasing the weight above 10 lb. per gal almost certainly results in a decided loss of mud unless the viscosity is increased and this latter throws too great a burden on the pump. The weight of the mud is reduced by the addition of water and this adds

(Continued on Page 83)

The mud gage in the picture at immediate right shows approximately 500 lb. per sq. in. while cement is being pumped into formation in first stage of multiple-stage cementing job

At far right, the gage immediately drops back to zero when pump is shut down preparatory to placing plug in casing to displace cement

Left: Larger pits used on Devonian wells in the Salem field. Note that the viscous mud cuts a path down the center of the suction pit on the right. Below: Recent Devonian completion in the Salem field already on the pump. Note the concrete cellar and pump foundation.



Right: Composite geologic section of the Salem field showing the approximately 700 ft. of predominantly limestone formations under the Aux Vases sandstone. The interval between 2,450 and 2,900 ft. is where most of the trouble is encountered in maintaining circulation

38 JARECKI STORES

TULSA, OKLAHOMA

SMIDLER, OKLAHOMA

RUSSELL, KANSAS
CHASE, KANSAS

BARTLESVILLE, OKLAHOMA
ELDORADO, KANSAS

KIEFER, OKLAHOMA

CUSHING, OKLAHOMA

SEMINOLE, OKLAHOMA

OKLAHOMA CITY, OKLA.

BORGER, TEXAS

PAMPA, TEXAS

ELECTRA, TEXAS

ABILENE, TEXAS

JAL, NEW MEXICO

SEAGRAVES, TEXAS

ODESSA, TEXAS

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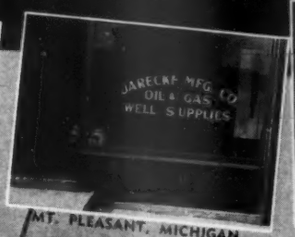

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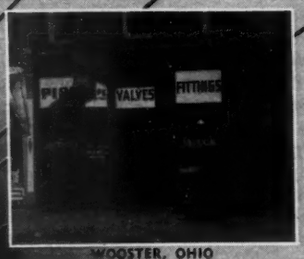

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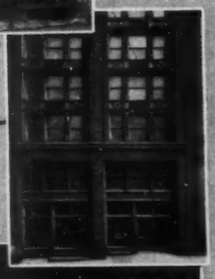

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Places in the Oil Country.

Pumping Viscous Oils With Centrifugal Pumps

By A. J. STEPANOFF
Ingersoll-Rand Co., Cameron Pump Division

IN considering the broad field of application of centrifugal pumps to the handling of various liquids we find that the handling of petroleum products and derivatives is becoming more important each year. One of the most perplexing applications in this field is concerned with the proper selection of centrifugal pumps when handling heavy viscous oils. This article presents a simplified and accurate method of predicting the performance of centrifugal pumps when viscosity causes deviation from tested water performances.

When pumping viscous oils the head generated by the pump and the capacity delivered by the pump decrease with increasing viscosity. At the same time the horsepower required to drive the pump increases because of lowered efficiency. Since centrifugal-pump manufacturers' experience has been concerned mostly with the handling of water and because most factory test facilities permit the testing of pumps on water only, the expression of performance when handling viscous oils has been based on a comparison with water performance. Numerous attempts have been made to establish a basis for calculating the oil performance of centrifugal pumps either from theoretical considerations or by establishing formulas to connect oil performance of pumps with water performance, but the results so far are not satisfactory. The trouble lies in the fact that viscosity affects hydraulic losses and these are difficult to evaluate even when pumping water.

Application of Laws

The application of the laws of dynamic similarity, such as has been used with very good results in calculating pipe flow, does not furnish an immediate solution because the operation of a centrifugal pump involves two transformations of energy: one producing the flow and generating the head and another absorbing part of the produced head to overcome hydraulic friction caused by the flow of liquid through the pump. For a complete similarity of pump performance, it is necessary that both functions are dynamically similar simultaneously. This is a physical impossibility.

By applying the principle of dimensional analysis to the problem of flow through centrifugal pumps the author has shown* that for complete dynamic similarity of flow of identical or geometrically similar pumps operating at different speeds and pumping liquids of different viscosities the three dimensionless factors

$$\Pi_1 = \frac{nQ^{1/2}}{(gH)^{3/4}};\ \Pi_2 = \frac{Q}{(gH)^{1/2}D^2} \text{ and } \Pi_3 = \frac{Q\ D}{D^3\nu} \quad (1)$$

must be the same:

Where

n = rotative speed
Q = capacity
H = head
g = acceleration due to gravity
ν = kinematic viscosity
D = impeller diameter

All three criteria are dimensionless if all quantities are measured in fundamental units only. The first factor is known as "specific speed" and has been used for a long time as a type number to distinguish between pumps of different head, capacity, and speed. This factor is constant for all geometrically similar pumps. The second is known as pump-type-unit capacity and also is constant for geometrically similar pumps. The third factor, Π_3, is Reynolds' number, where Q/D, represents velocity. This last factor varies not only with pump size for geometrically similar pumps, but also changes for the same pump with the pump speed. The problem is further complicated by the fact that it is possible to build pumps of the same type or specific speed which will differ in details of water passages and will behave differently when pumping viscous liquids, although their water performance is very nearly the same.

From a study of general requirements for a complete dynamic similarity it is possible, however, to make some conclusions which are useful when handling problems of pumping viscous oils.

1. As far as the generation of the head is concerned the requirement for a dynamic similarity is that

$$\Pi_1 = \frac{nQ}{(gH)^{3/4}} = \text{const. and } \Pi_2 = \frac{Q}{D^2(gH)^{1/2}} = \text{const.} \quad (2)$$

and this is independent of viscosity. From these two relationships the affinity laws follow. By combining Π_1 and Π_2 we obtain

$$\frac{\Pi_2^{3/2}}{\Pi_1} = \frac{Q}{n\ D^3} = \text{const.} \quad (3)$$

stating that for a given pump (D = constant) capacity varies directly as the speed; also for a constant speed n with pumps of different size, capacity varies directly as the cube of the impeller diameters.

By dividing Π_1 by $\sqrt{\Pi_2}$ we obtain

$$\frac{\Pi_1}{\sqrt{\Pi_2}} = \frac{nD}{(gH)^{1/2}} = \text{const. or } \frac{h^2D^2}{H} = \text{const.} \quad (4)$$

indicating that for a given pump the head varies directly as the square of the speed and at a constant speed for similar pumps head varies as the square of the impeller diameters.

2. When pumping water it has been found that the affinity laws hold even for pumps with very low efficiency (say below 50 per cent); there-

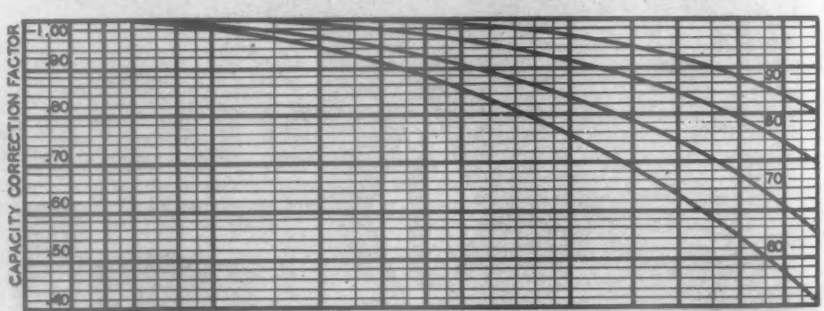


Fig. 1—Capacity-correction factor for pumps with water-peak efficiency as marked for capacity at best efficiency point

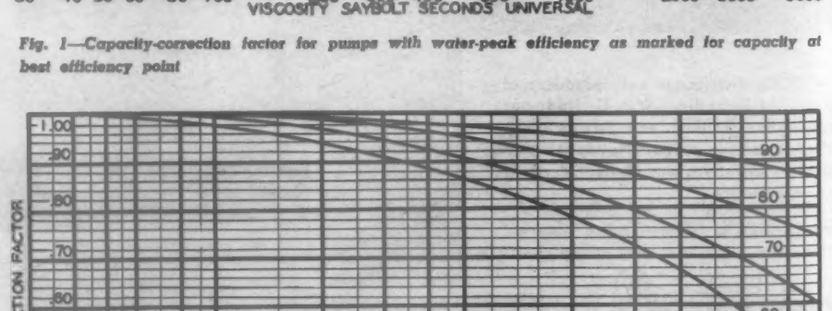


Fig. 2—Head-correction factor for pumps with water-peak efficiency as marked for head at best efficiency point

*"Specific Speed, Affinity Relations and Dynamic Similarity of Centrifugal Pump," paper presented at A.S.M.E. summer meeting, 1934.

fore, they should hold with reasonable accuracy when pumping viscous oils if the flow remains in the turbulent region.

3. If hydraulic losses in centrifugal pumps are expressed as Loss = $f\,V^2/2g$, where V is velocity through the impeller or volute and f is a variable coefficient, from analogy of the pipe flow it is reasonable to assume that this coefficient will decrease with the increase of Reynolds' number. For geometrically similar pumps Reynolds' numbers increase with pump size and also increase for the same pump when the speed is increased. As a result hydraulic losses become a smaller fraction of the total head. Thus the efficiency is increasing with the pump size and speed, which is true in practice within certain limitations.

When pumping viscous oils the Reynolds' numbers are lower than when pumping water, and for lower Reynolds' numbers the coefficient f decreases more rapidly with the increase of Reynolds' number; therefore, the increase of pump efficiencies with higher speeds when handling viscous oils is more pronounced than when pumping water. This is confirmed by actual tests. This effect is augmented by the fact that the disk friction loss at higher speed is a smaller fraction of the total power input than at lower speed, because the pump power input varies directly as cube of the speed, but the disk friction increases in a power less than third. Since the disk friction loss when pumping viscous oils consumes a considerably greater part of the total power input than when pumping water the gain in efficiency due to higher speed is greater pumping viscous oil than when pumping water.

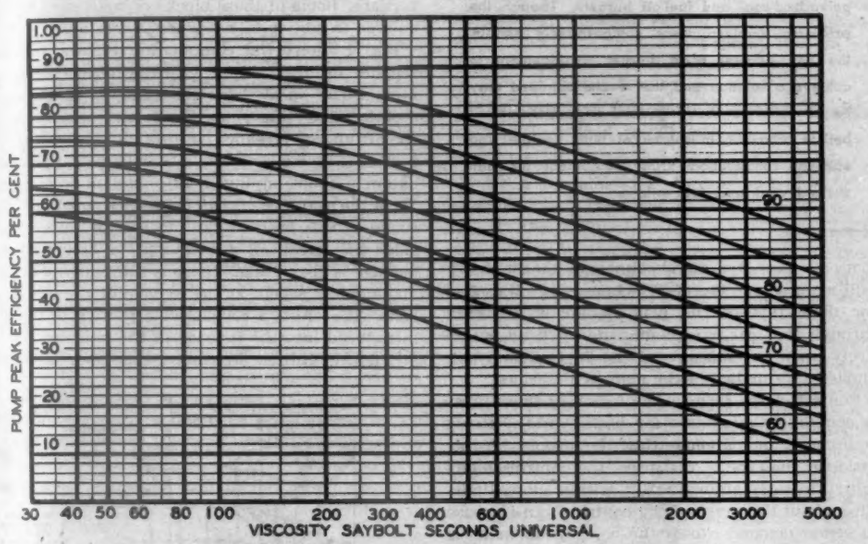


Fig. 3—Correction of centrifugal-pump peak efficiency obtained on water for pumping viscous petroleum oil

Head-Capacity Requirement

4. For a given head-capacity requirement a pump operated at a higher speed (or pump of a higher specific speed) will have smaller drop in efficiency when pumping viscous oils, because higher specific speed pumps will have smaller impeller diameters and power taken by disk friction will be a smaller fraction of the total power input. The increase in power when pumping viscous oils will be lower in that case. Again, as a rule, higher specific pumps will be of more efficient type hydraulically and the difference will be more pronounced when pumping viscous oils.

5. Since at pump shutoff there is no flow through the pump, viscosity has no effect on the true shutoff head of the pump. This is confirmed in practice.

6. When pumping viscous oils the power demand increases with viscosity and it has been found that the b.hp. curves when pumping viscous oils arrange themselves approximately parallel to the water b.hp. curve. This indicates that the disk friction loss which is independent of capacity is mostly responsible for the power increase.

Based on the above considerations, charts (Figs. 1, 2, and 3) have been prepared for viscosity corrections of the head capacity and efficiency based on test data accumulated by the writer during 13 years from various sources. Series of curves are given for correction factors for pumps of different water-peak efficiencies. In this way it is intended to account for variation in pump type or make. The head and capacity correction factors enable one to check whether or not the required head-capacity conditions can be met with the maximum impeller diameter of the selected pump. The correction of the pump efficiency when pumping viscous oils affects the power demand and motor size and therefore becomes an important item in pump-performance guarantee.

The viscosity correction factors for head, capacity and efficiency are given for points at or near the best efficiency points. The following example will show the procedure for the use of charts for estimating the pump performance when pumping viscous oils.

Suppose a pump is wanted to handle 600 g.p.m. of oil of 1,000 seconds S.U.v., sp. gr. 1.0, against a head of 250 ft. The specific gravity enters only into the calculation of brake horsepower and does not affect the pump selection or head-capacity and efficiency curves. These head-capacity requirements fall into the range of pumps with about 80 per cent water efficiency. Using as a first approximation this efficiency we pick out capacity correction factor for 1,000 seond S.U.v. from Fig. 1 to be 0.92 and head correction factor from Fig. 2 to be 0.91. This means that a pump should be selected for 600/0.92 = 652 g.p.m. and 250/0.91 = 275 ft. head water performance. A 4-in. double suction pump with 8-in. impeller diameter at 3,550 r.p.m. meets this requirement at 81 per cent efficiency at operating point and 84 per cent peak efficiency water performance.

Correction Factors

Now we take correction factors for the 84 per cent efficient pump for capacity 0.94 and head 0.93 and 84 per cent efficiency will drop to 60 per cent, according to Fig. 3. Note that Figs. 1 and 2 give correction factors for pump capacity and head, but Fig. 3 gives on scale at left margin corrected efficiencies and not factors. The efficiency at the operating point will be lower in the ratio 81:84, or equals 57.8.

The operating point will come from 638 g.p.m. and 269 ft. head water performance as shown in Fig. 4. Since the shutoff head stays essentially the same irrespective of viscosities, the head capacity curve for 1,000 seconds S.U.v. can be drawn through this point and the specified point using a suitable French curve.

Next calculate the brake horsepower for the

(Continued on Page 82)

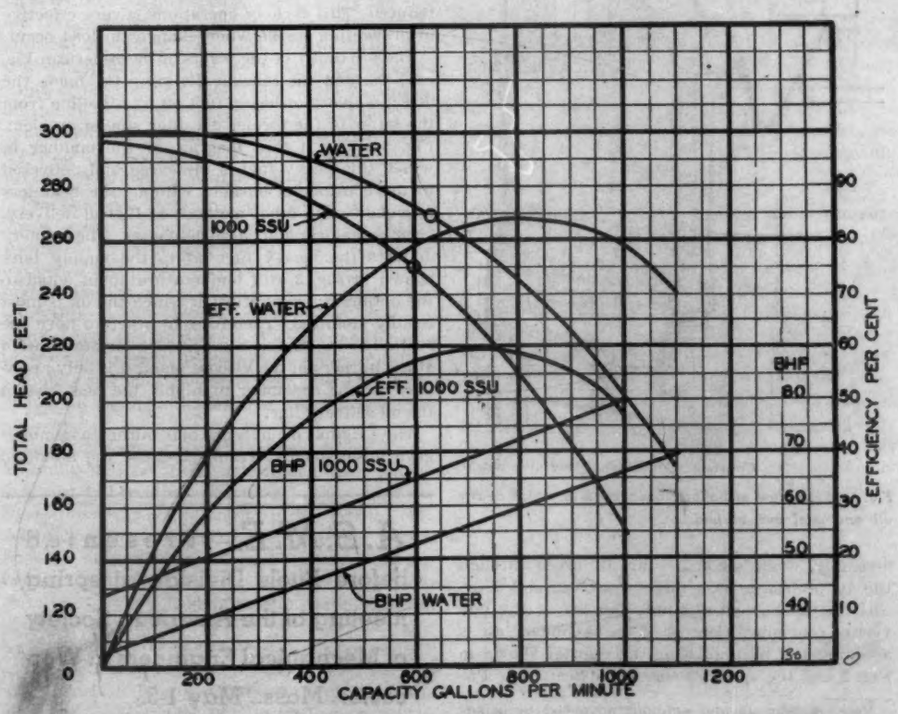


Fig. 4—Four-inch pump pumping 1,000 S.U.v., 3,550 r.p.m.

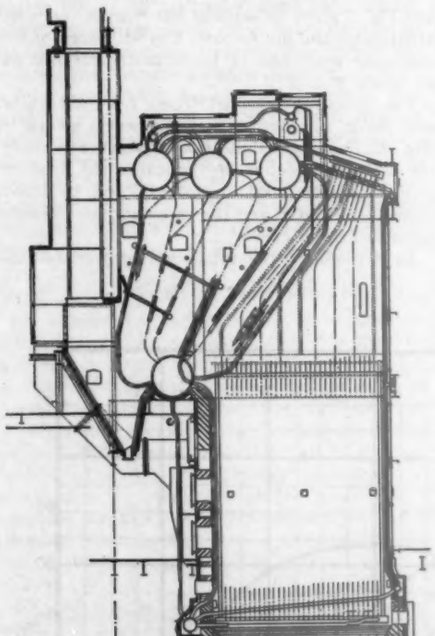
Mechanical Atomization of Fuel Oil Heavier Than Bunker C

By G. G. MARTINSON
Engineer, Sinclair Refining Co.

This paper reports the difficulties encountered and the solution when burning a heavy-petroleum cracking-still residuum as a fuel in combination pulverized-coal and fuel-oil burners. Though the problems involved were comparatively simple, the development of a burner arrangement to achieve a solution and the results obtained may be of value to the designers and operators of boilers who are in search of both flexible and efficient combination firing equipment for pulverized coal and fuel oil.

EQUIPMENT of the boiler plant of the American Viscose Co. at Marcus Hook consists of three boilers of C.E. type fin-tube waterwall-furnace construction, each having a maximum steam output of 150,000 lb. per hour at 425 lb. per sq. in. and 700° F. total temperature. Fig. 1 shows a side view in cross-section of one of these boilers. The furnaces, of the dry-bottom type, have a volume of 7,000 cu. ft. and a waterwall surface of 2,300 sq. ft. Steam from the boilers is used to drive three 3,000-kw. turbogenerators and three 2,000-kw. turbogenerators. Some of the steam is extracted from the turbines at 175 lb. per sq. in. and some at 20 lb. per sq. in. for plant process duty.

Each boiler is equipped with four Lo-Pul-Co type C.E. combination burners for oil and pulverized-coal firing, the general arrangement being shown in Fig. 2. When firing pulverized coal, the fuel is mixed with tempered primary air at the pulverizers and delivered through the center pipe of the burner assembly, while secondary air is forced through the air preheater by a forced-draft fan and delivered to the burner assembly outside of the pulverized-coal pipe. Control of the secondary air is accomplished by regulating the register shown in Fig. 2 and the speed of the forced-draft fan. Primary-air fans are direct-connected to the bowl-mill motors, and, therefore, when using oil as fuel for these furnaces no primary air is delivered through the coal pipe, combustion depending entirely upon the mixture of the fuel oil and secondary air supplied in the manner described.



Courtesy, Combustion Engineering Co.

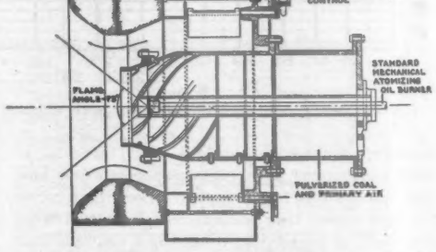
Fig. 1—Side view of boiler cross-section in which heavy oil and coal are burned

Control of the firing rate of each of these units is completely automatic for both types of firing equipment and, after setting the proper air-fuel ratio for the type of fuel used, the controls maintain this ratio automatically within close limits throughout the range of the controls. An increase in steam demand causes the controls to increase the air supplied to the burners before increasing the fuel supply and, with a decrease in load, the fuel supply is decreased before the air supply is reduced. This cycle of operations is very effective in preventing smoke when changes in load occur.

The proximity of the plants of the American Viscose Co. and the Sinclair Refining Co. made the direct delivery of heavy fuel oil by pipe line from the latter to the former a rather simple problem. Fig. 3 shows a flow diagram of the manner in which this heavy fuel is measured and delivered to the consumer's burners without the heat loss attendant upon other methods of fuel-oil delivery, such as tank-car and barge deliveries. The refinery delivers this heavy fuel oil to the supply tank shown in Fig. 3 at a temperature about equal to the optimum temperature at which the oil is most readily atomized. Therefore, in order to have the fuel oil at the correct temperature for atomization at the burners in the Viscose plant, it is only necessary for the consumer to supply the heat loss in the oil-delivery line.

The original oil burners and burner assemblies gave unsatisfactory results because the atomized fuel oil and the air required for combustion were not properly mixed. This condition caused the atomized-oil streams to impinge upon the side-wall tubes of the furnace where the oil distilled and the residue formed a coke deposit which kept building up in size until the weight of the mass of coke overcame its adhesive powers and the entire mass fell onto the screen tubes across the bottom of the furnace. Some of these blocks of coke were heavy enough to bow the floor screen tubes slightly.

Fig. 2 shows the combination burner and air register in cross-section with the normal angle of atomized-oil spray from the standard mechanical atomizer and illustrates the relative positions of the air and oil streams. In this illustration the oil burner is shown withdrawn to the greatest possible extent without impingement of the oil on the nozzle of the coal pipe. It can be readily noted that the flame in this position fails to fill the throat and, since the stream of air leaving the secondary-air passage is "barreling," there is little mixing of the air and fuel except at the outside of the oil-flame cone. Therefore, a considerable portion of the air introduced into the furnace in this manner is not efficiently utilized in combustion and, although excess air exists in the furnace, smoke and soot fill the fire box and boiler setting.


SECONDARY AIR REGISTER CONTROL
STANDARD MECHANICAL ATOMIZING OIL BURNER
FLAME ANGLE-TIP
PULVERIZED COAL AND PRIMARY AIR

Courtesy, Combustion Engineering Co.

Fig. 2—Original burner assembly with standard atomizing oil burner

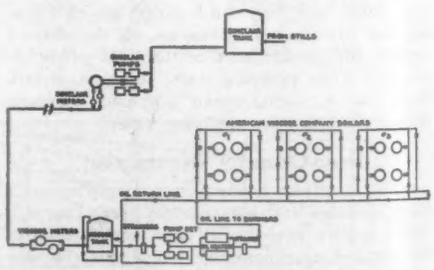


Fig. 3—Diagram of oil flow from refinery to consumer's burners

Steam atomizing oil burners with the tips drilled to give approximately the same included angle of flame cone as that produced by the mechanical atomizing burner tips were tried and produced only slightly better results than the mechanical atomizers. Experimental work was carried out with steam atomizing oil-burner tips with various

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Note: Statements and opinions advanced in papers are to be understood as individual expressions of their authors, and not those of the society.

drillings; it developed that a tip drilled to give a flame included angle of about 120° produced the best results. With this tip, the flame could be pulled back into the throat, without impinging on the coal-pipe nozzle, thereby forcing the air into the flame and resulting in good mixture of the fuel oil and the air required for combustion. The amount of steam consumed by the steam atomizers, while probably in line with the steam consumption of other modern steam atomizing oil burners, was considered to be an unnecessary loss. Therefore, a further solution to the problem, using emchanical atomizing oil-burner tips, was sought.

Design, Installation, and Operation of Fixed-Air Register

Since the normal mechanical atomizing oil burner gives a flame cone with an included angle of about 75° to 85°, which experience with steam atomizing burner tips had proved to be too narrow, it was deemed advisable to change the manner in which the air was introduced into the furnace in an effort to mix the combustion oil properly with the fuel oil. Another important reason for the decision regarding the air introduction was the fact that firing conditions using pulverized coal as the fuel was very good and it was felt that a change in air introduction would have less effect upon coal-burning characteristics than a change in the coal nozzle. The coal nozzle could, of course, be shortened to the extent of permitting the oil burner to be withdrawn far enough to enable its normal flame included angle to fill the throat of the burner. However, this procedure would undoubtedly disrupt the coal-burning characteristics of the burner assembly.

To direct the air stream into the flame produced by the standard mechanical atomizing oil burner, an assembly of 24 fixed vanes was made into a circular register, fitting between the coal nozzle and the refractory throat of the burner assembly, and placed at the furnace inlet of the secondary-air supply. Fig. 4, although it shows a cross-section

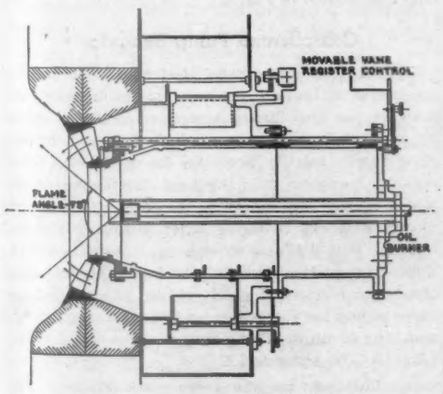


Fig. 4—Movable-vane air register fitted to original burner assembly

of the burner assembly fitted with a movable-vane register, indicates the position of the registers of both the fixed and the movable-vane type which was developed later. The vanes of the fixed register were arbitrarily set at an agle of 45° to the face of the burner assembly as it was thought that this setting would be sufficiently accurate to determine definitely the feasibility of this method of mixing the air and fuel oil more effectively. The shroud around the outer ends of the vanes was formed to produce a constriction on the air stream by making the outlet diameter smaller than the inlet and, thereby, to assist in obtaining a good mixture of fuel oil and air.

Tests were made, using these fixed-vane registers under actual firing conditions, which indicated that the angle chosen for the vanes had been too great for any normal load on these furnaces. Under light loads, the fire had an excellent appearance, all of the fuel oil being consumed completely within a short distance of the burner tip but, as the load was increased and the fuel-oil and air quantities increased, the flame was torn apart and a "sunflower" appearance of the flame became very noticeable. There was a short solid flame for about 3 ft. from the burner tip, then flame propagation was apparently too slow for the speed of the combined air-and-oil-stream mixture and no flame was apparent for the next 4 or 5 ft. of travel, after which ignition again took place and combustion was completed.

One of the surprising features of the test was that the flame produced, even though of such unorthodox shape, was remarkably stable and gave no indications of "puffing" or "backfiring." Since the direction and rotation of the air by the fixed-vane register caused the flame to flare out into the sunflower shape, it is obvious that there was no real length of flame extending into the furnace and most of the heat was concentrated on the front wall.

Development of Movable-Vane Air Register and Its Operation

The logical procedure from this point was to develop a movable-vane register which could be controlled from the firing floor of the boiler room, varying the position of the vanes with changes in load sufficiently great to require their readjustment. The register shown in Fig. 4 was designed with movable vanes located in about the same position in the burner assembly as the fixed vanes had been in the previous test. Each of the movable vanes was connected to a control ring by a small lug welded to the corner of the vane and riding in a slot in the control ring. This control ring was connected, through suitable linkage, to a rod which extended through the front plate of the burner assembly, terminating in a handle by which the vanes could be adjusted while the burner was in operation and could also be locked in a given position.

After the movable-vane air registers had been constructed and installed, a test was made to determine their characteristics using oil as the fuel and varying the load on the boiler within limits allowed by plant operations. Some difficulties were encountered in the operation of the movable vanes of the register, chiefly due to the expansion of the 18-8 chrome-nickel alloy from which the vanes had been made. Greater clearances were given to the vanes and their bearing supports and no further problems arose from that source.

Further tests indicated that a position of the vanes, suitable for normal load swings, was about two-thirds open at about 80 per cent maximum output of the boiler. Decreasing the load on the boiler more than approximately 15 per cent required the closing of the vanes of the register proportionately and vice versa. Firing conditions on oil were considered satisfactory as combustion was complete and the flame shape and length could be controlled by the adjustment of the movable-vane air registers.

The characteristics of the revamped burner assembly had not been determined with pulverized coal and tests were therefore started to investigate the firing conditions with that type of fuel. As previously mentioned, the secondary-air stream from the original burner assembly entered the furnace in approximately a hollow rotating-cylinder form or "barrel." This air-stream shape had been disrupted and changed in both direction and shape by the addition of the movable-vane air register at the secondary-air outlet. Tests made with coal as the fuel and the movable-vane register in the air stream were generally unsatisfactory as the register in the wide-open position seemed to take any rotational effect out of the secondary air that had been imparted to it by the register of the original equipment, causing an unstable flame condition. If the movable vanes of the added air register were partially closed, the flame was also unstable and ignition was difficult to maintain.

A proposal was made that deflectors be installed in the pulverized-coal pipe to direct the pulverized coal and primary-air stream toward the secondary-air stream in a manner similar to the shape of the atomized-oil stream. It is believed that this would have overcome the unsatisfactory coal-burning characteristics of the movable-vane register, but the idea was tabled in favor of further consideration of the original equipment using mechanical atomizing oil burners of another make in place of the burners originally supplied.

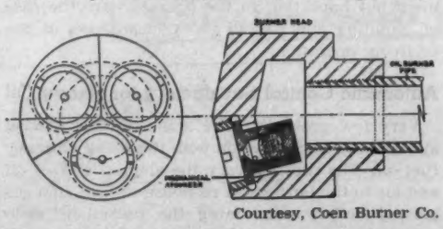
Sinclair engineers had definitely established the fact that the heavy fuel oil supplied by the refinery could be efficiently burned as fuel in the Viscose plant, even though the furnaces were completely water-cooled and the resultant furnace temperatures were comparatively low.

In seeking an adequate solution, another manufacturer was permitted to demonstrate a different type of mechanical atomizer. This burner manufacturer had had considerable experience with mechanical atomization of fuel oil in marine boiler furnaces and it was felt that engineers of the company might suggest a solution to the problem based on previous experience. Tests were made under the direction of two engineers, using this company's mechanical atomizers in the original burner assemblies, both with and without additional deflectors placed on the oil-burner guide pipes. These deflectors could be moved in or out along the oil-burner guide pipes. However, changing the position of the deflectors seemed to have but little effect on the fires, since no primary air passes through the coal pipes on oil firing and the deflectors could have no effect on the secondary-air streams.

Because of the fact that the mechanical atomizers used were more or less of the conventional type with the usual included angle of flame cone of about 75°, the results obtained from tests of these burners were similar to those obtained on the original mechanical atomizers. When using the atomizers of the second manufacturer, it was impossible to get more than a slight mix between the fuel oil and air and, consequently, a very smoky unsatisfactory condition existed in the furnace. The basic problem of mixing the air from the burner register, as installed originally, with the fuel-oil streams from the mechanical atomizing burner tips was still unsolved.

Wide-Angle Tri-Tip Mechanical Atomizer Successful

While the foregoing tests were being made, one of the Sinclair engineers had been searching for a mechanical atomizer which would produce a wide angle of spray. A mechanical atomizing burner tip was located which had been developed for steel-mill purposes. This tip consisted of three atomizers set in a single burner head in the manner shown in Fig. 5. The included angle of flame cone that would be produced by this arrangement was apparently about 120°. Judging from previous unsatisfactory results obtained with wide-angle steam



Courtesy, Coen Burner Co.

Fig. 5—Tri-tip mechanical atomizing oil-burner head

atomizing tips, it was assumed that the wide-angle mechanical atomizer would be successful. Four of these burner heads were immediately ordered, each containing three atomizing tips of a size estimated as correct for the normal load conditions.

Preliminary tests of these cutters upon their arrival indicated that they would be entirely satisfactory, except for size, as the included angle of spray was such as to produce the proper air-fuel-oil mixture. The atomizers of the original installation were too large for the load requirements, which resulted in a lower pressure on the fuel oil to the burners than required to give the best atomization. However, the tests that had been made showed sufficient promise to warrant the purchase of additional burner heads of this type to complete the installation on all of the boilers.

Atomizers of several sizes were ordered, the range in size making it possible to have all four burners of the boiler furnace in operation producing a balanced firing condition and an even distribution of heat to the furnace. Normal changes in load are easily taken care of by the range of the oil pressure to the burner, while the large changes, such as occasionally occur due to starting up or shutting down portions of the plant, can be taken care of in a few minutes by changing the atomizer tips.

In the operation of these burner tips, flame propagation begins within 1 or 2 in. of each of the atomizers but, 6 or 8 in. from the tip, the three streams lose their identity and become one large flame issuing from the burner throat. Because of the wide angle of the combined atomized-oil sprays from these burner tips, the burner can be withdrawn to a point where the fire completely fills the throat without danger of impingement of the oil spray on the coal nozzle of the burner assembly. Thus, the atomized-oil spray is forced into the secondary-air stream, as shown in Fig. 6, and com-

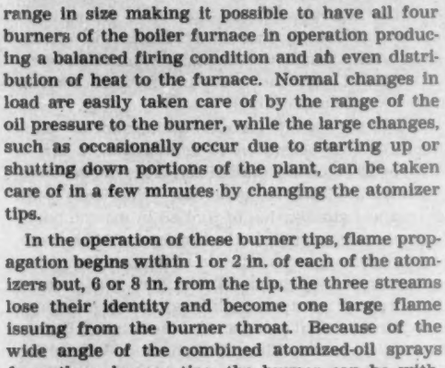


Fig. 6—Original burner assembly with tri-tip mechanical atomizing oil burner

plete combustion takes place with little excess air. Firing conditions are good and the complete operation of these furnaces on heavy fuel oil is entirely satisfactory.

These furnaces have been operated for more than 15 months using heavy oil as fuel, and the costs of steam and power produced during the operating period compare very favorably with those obtained while burning pulverized coal. Additional advantages, not included in the cost statement but important to the operator, are the ease of handling and overall plant cleanliness of the oil-firing operation.

Automatic Control Satisfactory for Heavy Oil

Very few problems have arisen on the control system used in connection with the firing of heavy fuel oil. The controls vary the amount of fuel oil and air to the burners in response to load changes on the boiler, maintaining the fuel-oil-air ratio set on the master control throughout the range of the control. The fuel-air ratio is manually set for the best combustion on any particular load and the proper ratio is then maintained by the control. A pilot or measuring valve in the fuel-oil line to the boiler burners actuates suitable equipment to damp the action of the control valve in the same line and, thereby, smooths out the flow of oil to the burners. This pilot valve as originally installed was of the piston-type and the heavy-oil fuel had a tendency to stick the piston, making the control sluggish. To remedy this condition, a diaphragm-type valve was substituted.

Physical Properties of Fuel Oil

The heavy fuel oil mentioned in this paper is a residuum product of a petroleum-refinery-cracking process and, as such, the characteristics of the oil may vary slightly from time to time with changes in operation. Representative characteristics of this heavy fuel may be listed as follows:

Specific gravity	1.014
B.s. and w., centrifuge, per cent	0.50
Viscosity, Furol at 122° F.	800-1,400
Pour point, °F.	80
Flash point, °F.	250
Sediment, per cent	0.05
Weight, lb. per gal.	8.45
B.t.u. per lb.	18,300

A temperature of approximately 275° F. has been found satisfactory to reduce the viscosity of the oil to about 20 Furol, or 150 seconds S.U. At this viscosity, the oil is readily atomized and its characteristics are such that the viscosity at the firing temperature is about the same, whether the Furol viscosity at 122° F. is 800 or 1,400. The carbon-hydrogen ratio is greater for the heavy fuel oil than it is for the lighter oils, consequently, the advantage of the heavy fuel oil lies not only in the additional heat obtained from the carbon but also in the proportionate reduction of loss from the formation of water vapor.

Discussion of Conditions and Results

In general, combination burner assemblies are of incorrect design for the efficient combustion of all the fuels included in the combination. The apparent practice, in the East, has been to design for pulverized-coal firing and to fit in accommodations for some other fuel, such as oil, in the easiest manner possible and with little regard for resultant operating conditions. The true combination burner assembly should handle all fuels intended for it in an equally efficient manner. Such an assembly cannot be designed without a complete knowledge of the characteristics of all the fuels and burner equipment proposed for a particular installation. Since this information may not be available to the designer and since there are many installations of improperly designed combination burner assemblies in operation at the present time, it would be advisable, where one of the fuels used is oil, for the designer or operator to investigate the possible advantages in using a multiple-tip mechanical atomizing oil burner in his original burner assembly.

The number of atomizers per burner head is not limited to three, nor is the included angle of spray from the tip limited to 120°. These conditions were found satisfactory for the installation reported in this paper, but another installation might require five or six atomizers, or more, per burner head and a much greater included angle of spray than the 120° used in the Viscose installation. It would appear possible, where faulty air distribution around the burner is inherent in the burner assembly, to improve overall combustion by the selection of proper-sized atomizers and face angles to alleviate this condition to a considerable extent.

Satisfactory combustion of heavy fuel oils, using mechanical atomizing oil burners, can be readily accomplished when the proper equipment is available for heating, atomizing, and mixing the oil and combustion air. The additional cost of this equipment over that required for steam atomizing oil burners can usually be justified on steam saving alone.

Conclusion

The results obtained in this investigation and herein reported have definitely shown that it is not only possible, but practical and economical, to burn heavy petroleum oils in properly designed combination coal-and-oil burners, using mechanical atomization under automatic control, in completely water-cooled furnaces.

Acknowledgment

The advice of O. F. Campbell, R. J. Self, and E. W. Griscom of the Sinclair Refining Co. is acknowledged in the successful completion of the investigation and the preparation of this paper. The author wishes to acknowledge, also, the willing cooperation of the American Viscose Co., the Combustion Engineering Co., the Coen Burner Co., and others for their assistance.

●

Pumping Viscous Oils With Centrifugal Pumps

(Continued from Page 79)

specified head and capacity, using 57.8 per cent efficiency:

$$\text{Brake horsepower} = \frac{600 \times 250}{3{,}960 \times 0.578} = 65.5$$

Locate this point in Fig. 4 and draw a brake-horsepower curve approximately parallel to the water brake horsepower. Now the efficiency for several capacities can be calculated from this brake-horsepower curve and the oil-head-capacity curve as shown in Fig. 4.

Complicated Pump Behavior

It should be understood that Figs. 1, 2, and 3 are based on limited test data taken on pumps of many types and makes tested at different times by several investigators and therefore will not give results equally accurate for all pumps. We believe, however, it is the best that can be done when taking into account the very complicated nature of pump behavior when handling viscous liquids. It is difficult to estimate the accuracy of these curves. However, it is believed that the efficiency correction is good within plus or minus three points for viscosities up to 1,000 seconds S.U., and plus or minus five points for viscosities from 1,000 to 5,000 seconds S.U.

In addition to the above described effects of the viscosity on the pump performance, pump behavior will be different when pumping oils if the pump operates at conditions approaching cavitation.

As a rule, petroleum oils will require suction liquid heads considerably higher than those for water to prevent cavitation. This is because vapor pressures of petroleum oils are higher than that of water and also because hydraulic losses in the suction pipe and impeller approach are higher with viscous oils. In addition to this, the usual oil is a mixture of many different hydrocarbons, each having its own vapor pressure, and in accordance with Dalton's law behaving as though it alone occupied the reservoir. The resultant partial pressure effects permit some hydrocarbons to vaporize at temperatures far below their normal boiling points. To go into details of suction conditions when pumping oils is, however, beyond the scope of this article.

Devonian Drilling Requires Conditioning of Mud

(Continued from Page 75)

to the mud costs as Aquagel must be added immediately to keep the viscosity at the desired level. Some few contractors are using chemicals for controlling the viscosity of the mud although water is favored by most.

The size of the circulating pits and the reserve pits have been increased as the purchase of native clay for a base for mud is expensive. However, some locations are decidedly limited in the amount of space to be given to the pits and in such cases even closer supervision must be given to the mud as the addition of even small amounts of material can affect the condition of the mud quickly when so little volume is being used.

Where serious trouble has been encountered in maintaining circulation, large quantities of native clay, Aquagel and Baroid have been used and then Fibertex added. Some operators are using cotton-seed hulls to help plug the formation but when this material is left in the mud for a considerable length of time, it begins to ferment and the control of the mud becomes more difficult.

Real trouble develops after the casing has been run and an attempt is made to cement it in place as the porous formations which cause the loss of mud also are responsible for the thieving of the cement. Instead of the casing being surrounded by a protective sheath of cement from the bottom of the hole to the surface, it is only protected up to the thief formation, at most 1,000 ft. off bottom. Considerable trouble may be expected to develop in the later producing life of the well from the action of sulfur-bearing waters, common to the area, on the casing and in addition the casing and formations are unprotected in the horizons which are already producing in the field, the Benoist, Aux Vases and McClosky.

Elimination of this trouble has led to attempts to cement off the porous formation before casing is run, a cement retainer being run above the porous zone on the drill pipe and the cement forced into it until a buildup in pressure is obtained. About 150 sacks containing 12 per cent Aquagel is used for the squeezing of the formation. The mud in the hole is then conditioned before an attempt is made to run the casing; when the casing reaches bottom it is cemented in place with 700 sacks of cement. This method has not been widely used as it delays the running of the pipe and considerable trouble may develop while trying to land the casing. One operator favors it and is completing his wells in the above manner.

The commonest method used to cure the trouble is to run the casing with a float shoe on bottom and a multiple-stage cementing tool located about 1,500 ft. off bottom or just below the McClosky producing zone. Cement is then pumped through the float shoe and around the bottom of the casing until it becomes evident that the cement is entering the porous zone. In a few cases the cement has been circulated back to the surface without using the multiple-stage tool, but this is unusual; in several other cases the hole has bridged and it has been impossible to get any more cement in it.

When it becomes evident that the cement is entering the formation (the pumping in of 300 to 500 sacks will indicate whether this is the case) the multiple-stage tool is opened and 300 to 500 sacks pumped behind the casing through the ports. Some are using a cementing basket below the multiple stage to form a bridge so the cement can go only upward; others attempt to get a shutoff of the porous formation by pumping in batches of cement until a pressure buildup is obtained.

A variation of the same scheme is the squeezing of cement behind the pipe through the ports in the multiple-stage tool with a pair of cement retainers. In this case the bottom retainer is used as a bridge located below the multiple-stage cementing tool and the upper retainer is used for the cementing and is located above the multiple-stage tool. In one case the pressure required to start circulation into the formation was 850 lb. per sq. in., the pressure dropping to 600 lb. per sq. in. before the cement was started behind the pipe. One hundred and fifty sacks of 72-hour (setting time) cement were pumped into the hole with a final pressure of 900 lb. per sq. in. After setting 2 hours, another batch of 25 sacks of 14.5-lb. per gal. slurry was pumped in and let set 1 hour, after which 20 sacks of 14.5-lb. per gal. were pumped into the hole under a pressure of 900 lb. per sq. in. and let set for 4 hours. A pressure of 1,500 lb. per sq. in. was then put on the casing without any loss of fluid.

Another method used by several operators is to run the casing in the regular manner and cement it around the bottom with approximately 300 sacks. After allowing time for the cement to take its initial set, a second batch of cement is forced into the hole behind the pipe through the braden head. The cement is thus forced downward, the fluid in the hole being displaced into the formation. A variation of the same scheme is to pump the cement around the bottom of the casing and then immediately pick up the pipe about 2 ft., close the braden head and start pumping cement into the annulus from the top; the pipe is set back on bottom as soon as sufficient cement has been pumped in from the top to insure sealing off the upper formations. The danger of the cement around the shoe taking its initial set and preventing the return of the pipe to bottom has caused this method not to be favored.

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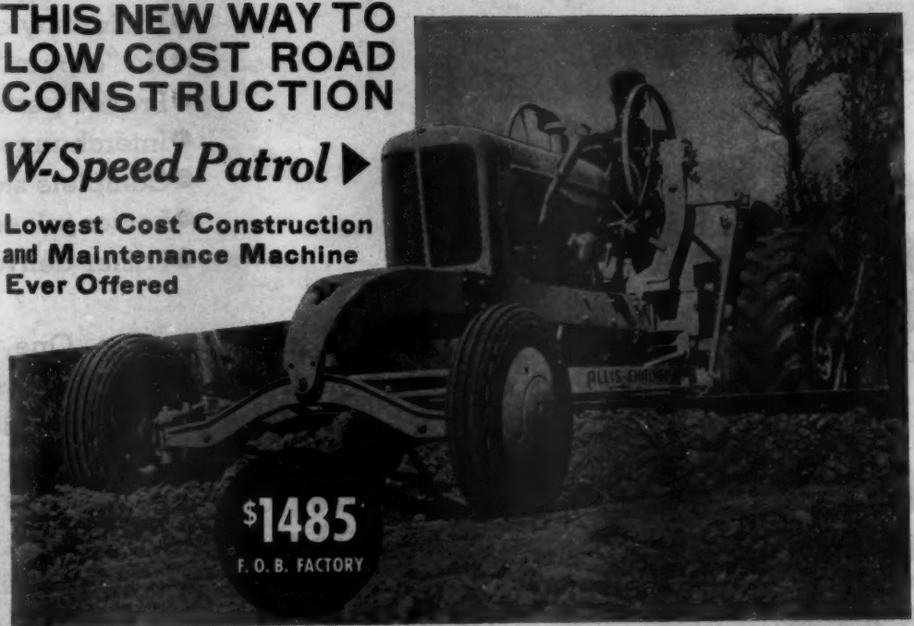

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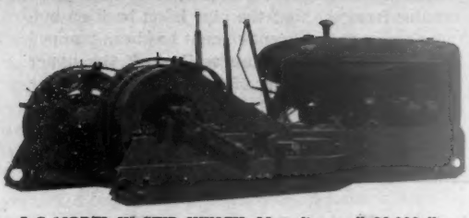

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A-C MODEL W WINCH TRACTOR, Max. line pull 20,666 lbs.

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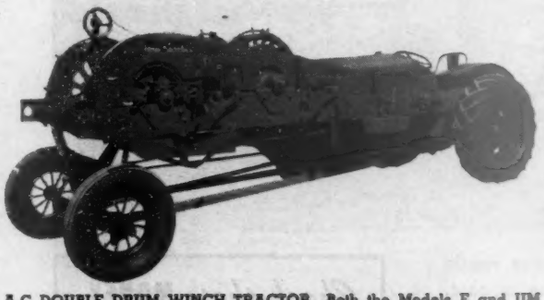

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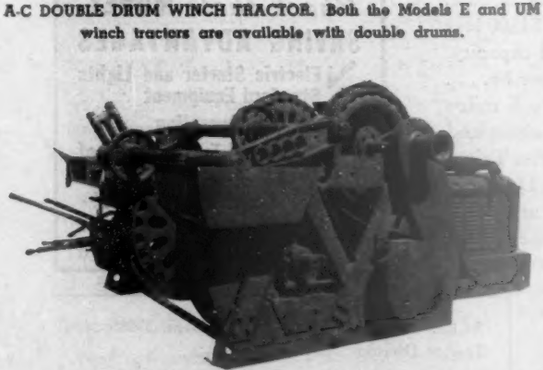

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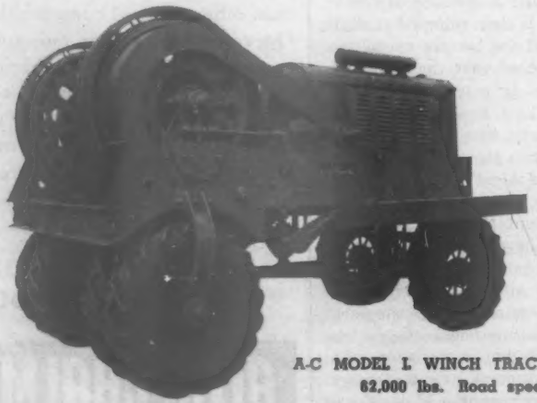
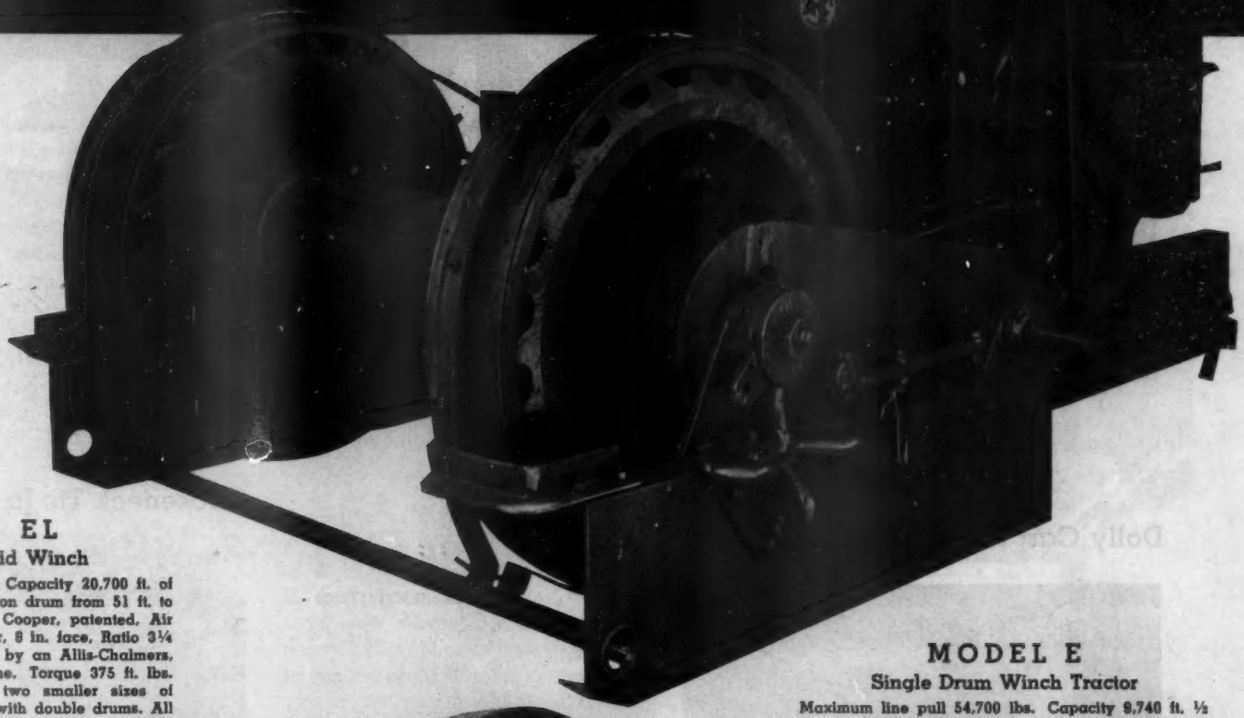


A-C MODEL L WINCH TRACTOR, Max. line pull 62,000 lbs. Road speed 12 m.p.h.



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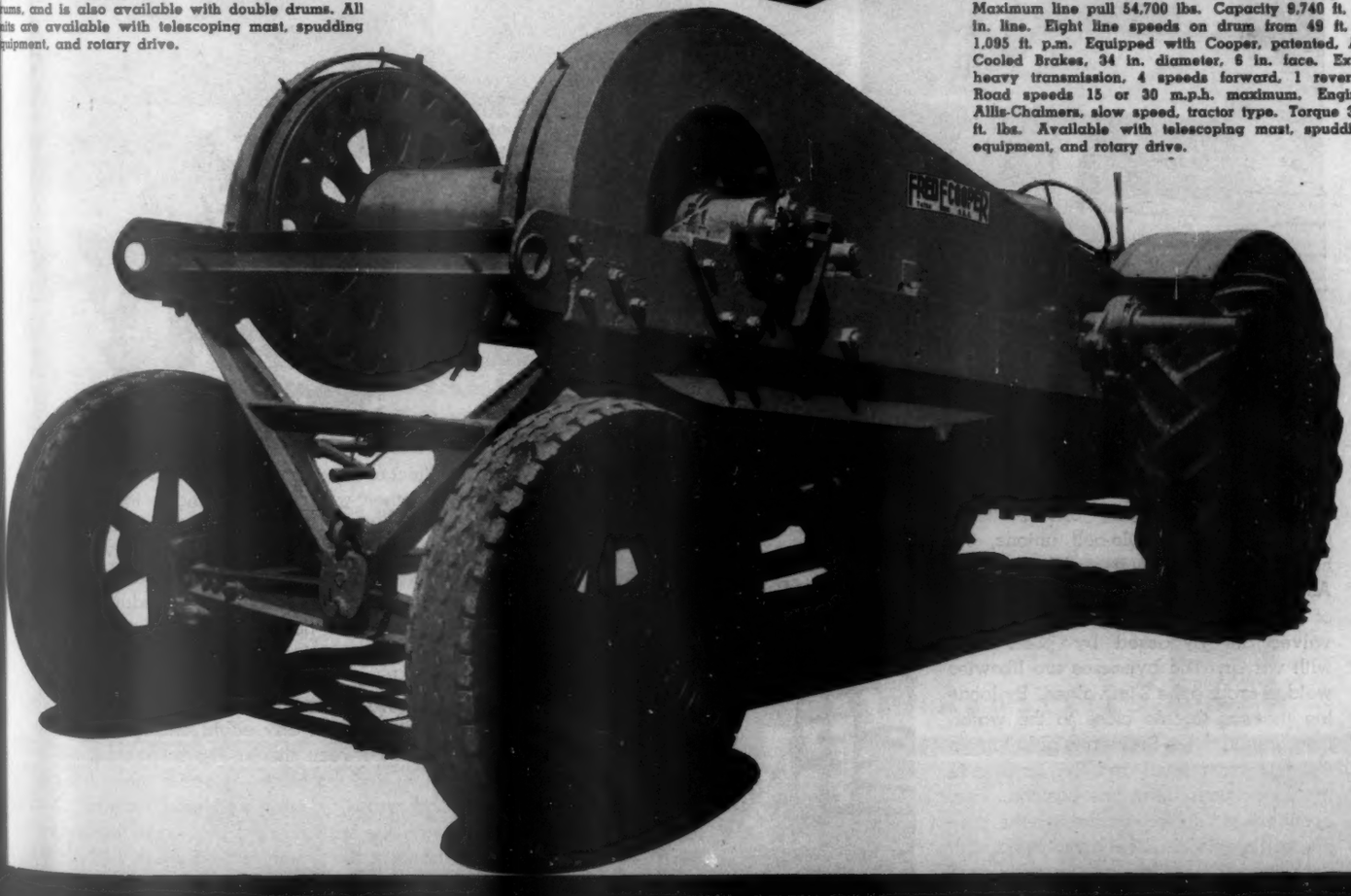

Operating Ideas

Tail Chain for Spinning Line

Instead of using a straight rope for spinning up the drill pipe while going in the hole, some crews use a tail chain on a forked line. The other part of the forked line it attached to the backup tongs and it makes it possible for the cathead man to spin up and tong the drill pipe without taking the rope from the cathead. Principal advantage of the chain is it does not slip on muddy pipe as will a spinning rope. The chain is always looped around the pipe so it will travel upward as the pipe is spun instead of downward. As soon as the tool-joint pin and box are together, the backup man has only to flip the top wrap of the chain upward and cathead man can begin spinning the pipe. The backup man wets his leather-palm gloves occasionally so the chain will pass through his hands smoothly.

Dolly Cart for Control Equipment

On the Gulf Coast, each piece of equipment used under the floor weighs several tons. Moving this material into position is very difficult as the catline generally suffers severe damage if subjected to other than a straight pull. One operator has designed a dolly cart made from heavy I-beams and heavy sheet steel. The master gate and blowout preventer can be loaded on this cart and then pulled under the derrick floor where the catline can be tied on for lifting them into position. Board walks are laid around many of the rigs because of the swampy conditions.

Welded Water-Feed Manifold

One Gulf Coast operator designed a water-feed manifold which consists of a 3-in. header and 2-in. drops welded together. By unflanging one multibolt union and five single-bolt unions, the header can be disconnected for moving. As an aid in the regulation of the amount of water going to each boiler, the 2-in. valves are bypassed by ¾-in. lines with valves. The bypasses are likewise welded around the 2-in. valves. By locating the gas throttle close to the water-feed manifold, the fireman is able to control the water level and the amount of fire in the boiler from one position. Fuel economy is effected by having the boilers insulated with sheet metal lined with asbestos. The pumps for the boiler feed are mounted on separate skids.

Gooseneck Tie-In

Effect of temperature changes during flowing, together with possible shock to well-head connections due to intermittent operations of the well, combine to make it advisable to have a flexible tie-in for the tubing string, casing and flow line. One producer attains the desired flexibility by using a simple swing-connection between the tubing and flow-line; relying upon a combination of swing, gooseneck and long sleeve connection to permit any slight changes in alignment between the above mentioned equipment and the casing to occur without imposing strain on any well-head fittings. Even with the well flowing by heads the hookup absorbs the pound of fluid slugs through the flow line without overloading the line from the casing.

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SERVING THE OIL AND GAS INDUSTRIES

Surface-Controlled Intermitter Utilizes Static Fluid Column

By D. H. STORMONT

IN producing oil wells by gas-lift methods one of the most difficult types to be handled is that of low bottom-hole pressure, with either a high or low productivity index. Gas-lift equipment manufacturers have attempted to design various types of trouble-free intermitters for producing either in open hole or in the casing, depending upon the characteristics of the well, and they have met with considerable success. Recently, however, a step toward advancement was made by a new type intermitter which is entirely mechanically controlled from the surface with relatively simple controlling equipment. The intermitter was placed in operation for the first time in a well in the Sligo field of Bossier Parish, North Louisiana, with highly satisfactory results, and it offers promise of producing the well to economic depletion.

This new type intermitter is entirely different from any yet placed in use, so far as its operation and setup are concerned, in that it makes use of a static-fluid column established from the flow device to the top of the hole. This fluid column acts as a medium of control between the two points: It transmits a force applied at the surface to the bottom of the hole where it moves a piston, which in turn directly closes the gas valve on the intermitter. When the pressure is released from the dead-fluid column the piston moves upward, thus opening the valve to let gas inject into the below-packer chamber. As the flow intervals and periods of gas injection are regulated by the controls placed on the well's surface connections, they will operate regardless of any conditions set up in the well itself. Once the flow periods are adjusted to conform with the well's producing capacity, lifting is accomplished with low gas-oil ratios and high efficiency.

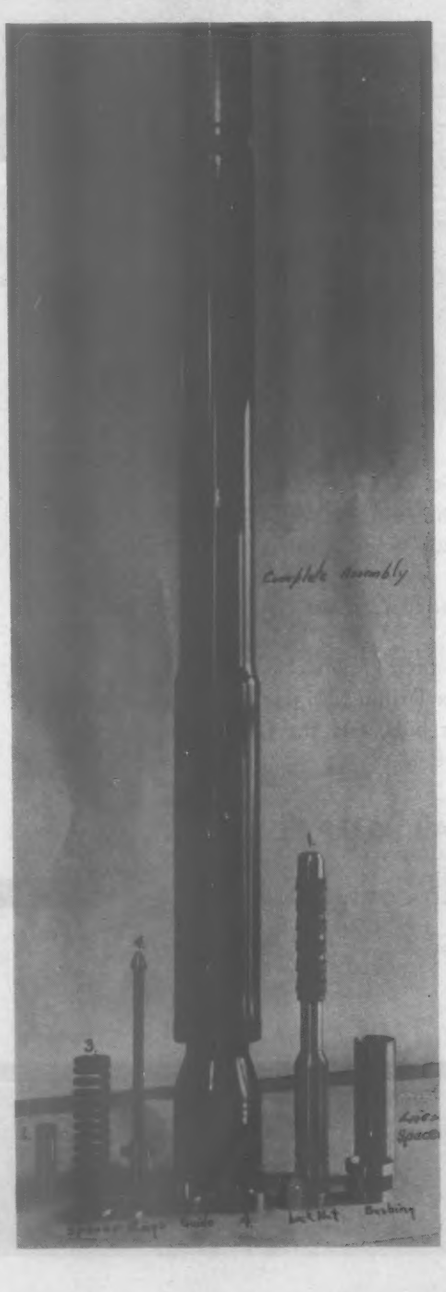
In the particular installation, where bottom-hole pressures of the 3,100-ft. Paluxy production are in the neighborhood of 300 lb. or less, the fluid is being lifted with a maximum gas-oil ratio of 450 cu. ft. per bbl. Pointing to the efficiency of the intermitter is the fact that on a 24-hour swabbing test the well failed to produce any more oil, with considerable pumping each time the swab made a trip. Only one unit is now in operation, being on production steadily without any down time for corrections or adjustments, but the operator, Triangle Drilling Co., is now installing two more units on nearby wells.

Important Feature of Intermitter

An important feature of the intermitter, which was recently designed and invented by R. D. May, of Oil Lift Supply Co., is its provision for shutting off input gas long before the flow head has reached the surface. Full expansion of gas is an important factor in gas lifting and is fulfilled in this device. The high velocity of the gas and fluid cleaning the chamber above the standing valve, the ability to clean the well from the bottom of the hole and not have a column of fluid between the packer and the chamber base, a positive control of the input-gas volume and a dependable control on rate of production are other important features of this new intermitter.

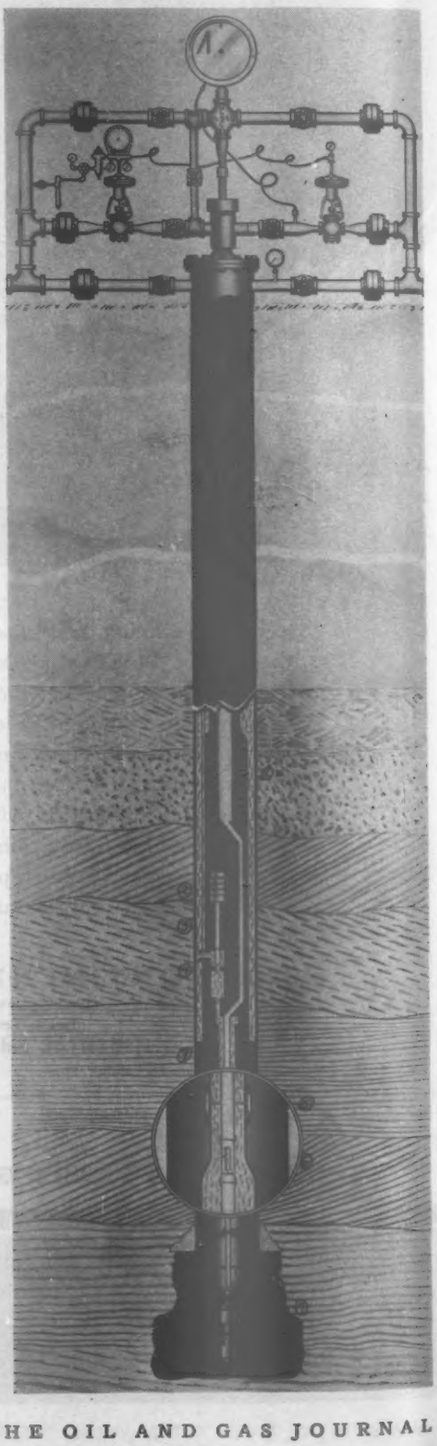
Surface-control equipment consists of a time-cycle controller, an input and exhaust regulator, and one regulator for controlling the casing pressure on the well. The entire control assembly is simply installed on the tubing wings, or can be built into the christmas-tree hookup. A hanger for suspending a small inner string is installed above the master gate in place of the tubing bullplug.

Fig. 1—(Below) Basic parts of the intermitter and the complete assembly. Fig. 2—(right) Diagramatic sketch of intermitter installed in a well and the surface equipment in conventional christmas-tree hookup



Feed-in intervals and periods of gas injection into the chamber are easily adjusted by the spacing of small pins in the time-cycle controller and the speed of the clock operating the control.

In Fig. 1, separate parts of the intermitter and



the complete assembly are shown, while Fig. 2 shows the device installed in a well and its surface-control equipment. Numerals of both illustrations refer to the same parts and an explanation of each follows:

1. A liner for seating a barrel with all cups facing upward is contained in the upper part of the assembly. The barrel is screwed onto the end of the macaroni string and remains stationary after being seated. This allows the annulus around the small string to be filled with fluid up to the christmas tree proper for a medium of control. The barrel is streamlined to prevent cups from rubbing on the side of the tubing while it is being run into the hole and will not hang on tubing collars. It also is provided with a fishing neck.

2. A small piston of K-monel metal, protected with a series of leather-wiper cups to prevent any debris entering the liner, is mounted into a honed liner of monel tubing stock. Travel of the piston seldom exceeds ¾-in. Oil rings are cut around the piston so as to equalize pressure created on the entire area around the piston. The liner and piston can be replaced for different calibration in a few minutes in the field if necessary.

3. A heavy-duty steel spring ranging in capacity from 400 to 5,000 lb. is used, the capacity depending upon the depth of the well and the weight of the static-fluid column the spring will have to support in an open position. Compression on the spring is established when additional pressure is applied to move the valve down to its seat; the spring is directly under the piston and the valve stem attached to the piston. Springs are not set under any compression when installed, but are fitted snug.

Orifice Sizes Vary

4. The valve and seat is of the needle type with a knife edge on the seat, all material being constructed from monel stock. Orifice sizes vary in size, depending upon the conditions of the well itself. A wide range is possible on all orifices, allowing for changing conditions of the well as time goes on. Spacer rings are used to place the seat a known distance from the valve when open. This allows for so much compression on the large spring and in turn determines the opening and closing pressure that is required to either open or shut the valve. The liner also is supported by a long bushing around the spring, which is fitted into a jammed position by the valve-stem guide. The seats are also placed into a locked position. Makeup of the assembly allows it to be easily pulled and the calibrated spacer rings can be installed for any desired operating pressures.

5. Below the formation packer, the gas bypass assembly, which is simply two vertical, self-cleaning monel check valves, is installed. This assembly is used to eliminate accumulated pressure under the packer between flow intervals or gas circulation through the standing valve on chamber base. One feature eliminates undue pressure on the formation and will keep it at separator pressure, and the other eliminates the light, frothy columns of fluid caused by gas circulation. The latter is highly favorable in high-ratio wells. The valves are installed on the packer base, immediately above the intermitting fluid level. Thus when pressure is applied to the chamber to displace the accumulated fluid, both checks immediately close and stay shut until the flow is over.

6. An equalizer valve, the sole purpose of which is to equalize pressure between the chamber and the macaroni string hanging in it, is made up in a collar of the small string. When pressure is applied to the accumulation chamber to "U-tube" the fluid up into the macaroni string, the valve immediately is closed due to velocity of the fluid in the small eductor tube. When the flow is completed and the gas port valve is closed, the chamber pressure will begin to decline. When a certain pressure is reached, depending upon the flowing bottom-hole pressure of the well, the standing valve will open and fluid will flow from the formation to fill the chamber again. At this point the fluid will seal the end of the eductor tube and would normally hold a certain amount of pressure in the chamber. In turn, the well would then feed into the accumulation chamber in a U-tube effect. The valve is for that purpose. When this point is reached in the completion of the flow cycle, it will open the instant the end of the pipe is sealed and will equalize the remaining pressure in the chamber, thereby letting it fill up in an equal manner.

Surface-control equipment of the intermitter in operation on a producer in the Sligo field of North Louisiana

7. The packer may be of any type, but preference is given a production type. The head is dismounted, however, as the device may be fitted to any style packer by simply screwing it on in place of the original packer head. No unnecessary bypass or conduits are needed to provide gas flow from below-packer chambers as this is all provided in the assembly that is made up on the regulation packer.

Method of Operation

As stated previously, the medium of control from the surface to the bottom-hole intermitter is established by a static-fluid column of oil which is simply run into the annulus around the inner string when the well is first unloaded. Additional fluid may be added when necessary by opening the wing gate when the well is making a head.

The complete installation requires two strings of tubing, the inner string remaining in a stationary position when once seated in the liner. The well may be produced either through the small string or in the annulus around it. If unloading valves are needed, where there is not ample pressure to blow the well around by casing flow, the well is produced around the inner string. Whichever way is necessary, the controlling fluid is then in either the small string or around it; the device is set simply by rotating the head upon assembly for either flow.

The dead-fluid column with a known static pressure rests upon the monel 1-in. piston protected by leather wiper cups. This pressure in turn is supported by the mentioned heavy steel ⅛-in. roll spring, 6½-in. in length and approximately 2-in. in diameter. The spring compression is determined by knowing the gravity of the oil, or its gradient per foot, depth of the intermitter in the well and the pressure available for control of the equipment.

No oil flow occurs through the gas intermitting assembly and the only moving mechanism in the entire assembly is the protected long-life piston and liner. Calibration of the intermitter is very simple, and is accomplished with the use of labeled spacer rings placed between the bushing and valve seat. By using a hydraulic pump or dead-weight tester, full action for testing can be quickly set up. A connection also is provided on the assembly for testing under pressure conditions that would exist in the well.

To prevent the accumulation of paraffin in the chamber and small tubing, lubricators have been installed on the input gas line to the casing. When the valve is open circulation can be set up in either direction with chemicals, hot oil or kerosene being used to remove the paraffin. Also, a conventional traveling scraper could be placed in the tubing so that it will rise and fall with each flow interval.

The downsweep of fluid in the chamber provides an efficient means of keeping the standing valve clean and for handling loose sand. The entire equipment is streamlined to eliminate any possible points of plugging by foreign matter, such as swab rubbers, packer rings and soft rope. Also, reverse flow can be established if desired. When the well is shut in, the gas valve can be closed, thus preventing any bottom-hole water rising in the casing, which is essential in corrosive areas. The static-fluid level will then be reached in the small string, making the well very easy to kick off again if water happens to accumulate and the supply pressure is low by simply injecting the gas down the small string and displacing into the casing for casing flow.

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Questions and Answers

Will you kindly advise me as to the cost of equipping a 3,500-ft. well in southern Illinois? In one issue of The Oil and Gas Journal I saw an itemized list covering the cost of equipping a well after oil is "hit." Can you tell me what issue it was?—F. M. H., Chicago, Ill.

THE cost of equipping wells of various depths in Illinois was given in the October 26, 1939, issue on Page 98.

In answer to your first question, any cost figure for equipping a well would have to be based on the specifications as given by the contract. This should include the grade, weight and size of the casing, tubing and rods, the type of tubing head, the amount of cement to be placed around the casing, the type and capacity of the tank battery, type and capacity of separator and treater if they are needed, and the type, make and size of the pumping unit and motor; the operator might also wish a pumping derrick left over the well and this would add to the cost.

Exclusive of preparing the well site for drilling, the total cost of equipping the average flowing well of that depth is approximately $8,200. This includes $250 for 10¼-in. surface casing, $2,660 for 3,500 ft. of 17-lb.-per-ft. 7-in. o.d. casing, $1,250 for cement and cementing, $940 for 3,500 ft. of 2⅜-in. 4.7-lb.-per-ft. tubing, $100 for a tubing head and other equipment, and $1,000 for tankage. If the well is placed on the pump this will require an additional expenditure of $450 for ¾-in. rods, $1,000 for a pumping unit and $500 for an engine. The total for the well will then be $10,150. These figures are only approximate but they are in line with practice in Illinois. There is also often the additional expense of trucking and labor for running the tubing, rods, and installing the pumping unit and motor, bringing the total investment to approximately $11,000.

QUESTIONS ON TECHNOLOGY

By W. L. NELSON, TECHNICAL EDITOR

W. L. NELSON

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to W. L. Nelson, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists, and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible. Inquiries must be signed but only the given initials will be printed. The source of the question is considered to be confidential.

Questions requiring a discussion of patents, extended computations, or a detailed study cannot be considered. When the matter is of general interest, a reply will be published within a reasonable time.

Simple Gasoline Extractor

I would like to know if there is any simple method of stripping a small content of natural gasoline from gas in order to make it suitable for commercial pipeline use. The gas from the distillate wells in question is too rich, by about 0.1 or 0.2 gal. per thousand, to meet the requirements of the gas company, and is too lean to justify the installation of a gasoline plant.—M. I. E.

The presence of natural gasoline in natural gas is not objectionable to gas companies unless it is in the form of a mist of liquid particles which accumulates or is produced in the gas line by the pressure and temperatures that are maintained therein. If your gas already contains a mist before it enters the gas line, the mist can be extracted or scrubbed from the gas by a simple mist extractor and removed through the common gasoline drip.

If, however, the gas does not contain mist as it issues from your line, there are no simple methods of removing the gasoline. Among the methods that are available are (1) Absorption in an oil as in a natural gasoline plant; (2) adsorption on activated charcoal as by the charcoal process; (3) reduction of the pressure in two stages as in a high-pressure distillate plant, and (4) possibly cool the gas by a few degrees and then extract the gasoline by a mist extractor and drip.

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Fluorescence of White Oil

In making white oil at our plant we find it necessary to use 700 lb. of fuming sulfuric acid per barrel followed by a clay-contact treatment in order to destroy the light blue "bloom" of the oil. Will you please outline the manufacture of white oils so that we can cut down on the acid required?—A. L. B.

Many refiners have been unable to remove the bloom of white oils without excessive cost—and have generally blamed the failure on the type of crude oil. Nevertheless, no rules for the selection of suitable crude oils have been disclosed. The several factors that are of importance in white-oil manufacture are somewhat as follows:

1. *Preliminary treatment or selection of stock.*—The raw lube stock may be extracted by means of such solvents as liquid sulfur dioxide or phenol, or a special cut may be withdrawn from solvent processes already operating in the plant. Another means of eliminating much of the original coloring materials is by collecting the first filtrate from the percolation filters. In the last-named manner, some refiners have produced white oils in small quantities without recourse to further treatment.

2. *Acid treatment.*—A preliminary treatment with 66° B. acid is often used and after long settling the oil is treated with a series of dumps of fuming sulfuric acid, each of about 20 lb. per bbl. The total acid required ranges from as low as 60 to about 300 lb. per bbl., depending upon the stock. The acid consumption is said to be materially reduced by removal of the sulfonates after each three or four acid treatments.

3. *Removal of sulfonates.*—Sulfonates may be removed by neutralization with sodium hydroxide and washing with hot water, or by vacuum (or steam) distillation. They may also be removed by alcohol (or 50 per cent alcohol with sodium hydroxide) or acetone washes, but this expensive method is usually not used except as the final step in producing medicinal oils.

4. *Filtration or clay contacting.*—After acid treatment and removal of sulfonates, the oil is filtered through fuller's earth (often 200 lb. per bbl.) at a temperature not exceeding 150° F., or treated by the clay-contact process. This operation is said to be primarily for the removal of "bloom" and for improvement in odor and taste.

Gurwitsch mentions the use of nitronaphthalene as a deblooming agent.

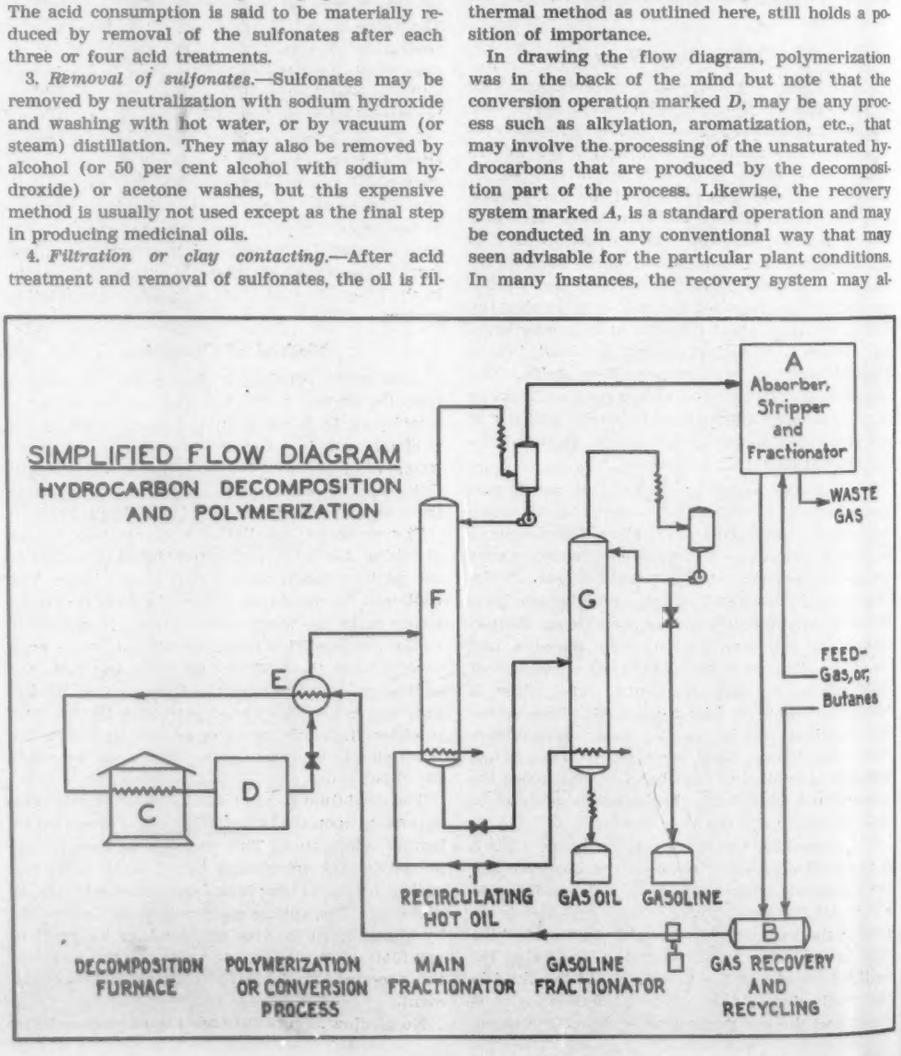
●

Hydrocarbon Decomposition and Conversion Processes

Can you outline for me what is meant by the name hydrocarbon processes?—W. O. C.

In many of the new hydrocarbon-conversion processes, the first step is the production of reactive hydrocarbons such as the butenes or propene, from the corresponding paraffin hydrocarbons (butanes and propane). This may be accomplished in two general ways: by thermal decomposition as indicated in the flow diagram on this page, or by catalytic dehydrogenation. The relative merit of these two methods has not been defined as yet by commercial operations, but the thermal method as outlined here, still holds a position of importance.

In drawing the flow diagram, polymerization was in the back of the mind but note that the conversion operation marked *D*, may be any process such as alkylation, aromatization, etc., that may involve the processing of the unsaturated hydrocarbons that are produced by the decomposition part of the process. Likewise, the recovery system marked *A*, is a standard operation and may be conducted in any conventional way that may seen advisable for the particular plant conditions. In many instances, the recovery system may al-



ready be operating in a refinery and is simply enlarged or operated at a larger capacity in order to handle the gases from the conversion process.

If the source of butanes is a field or refinery gas, the feed is introduced into the gas-recovery system marked *A*, whereas if the feed stock consists of liquid butanes, the feed is introduced directly into the recycling stream of material labeled *B*. In nearly all conversion processes such as cracking, reforming, decomposition, polymerization, etc., it is necessary to produce a small yield-per-pass and recycling must be practiced to gain a large ultimate yield. Thus, in thermal decomposition the yield-per-pass is usually less than 45 per cent based on the furnace charge stock or in a 1,000-bbl. plant it would be necessary to recycle about 2,000 bbl. of material through the furnace. The recycle stock consists of some undecomposed butanes and usually some propane which is produced in the process. The propane is more refractory than the butanes and hence the recycle stock is a somewhat refractory stock, just as recycle stock in a cracking plant is more refractory than a fresh stock. The furnace feed stock is heated by an exchange system indicated in this diagram simply as *E*, and from thence it passes into the decomposition furnace (*C*). The lighter hydrocarbons such as butane, occupies such a large volume at temperatures of 1,000-1,150° F. that high pressures must be employed. Thus the outlet pressure on the furnace usually exceeds 700 lb. per sq. in. and may be as great as 1,500-8,000 lb. per sq. in. if the material from the still is to proceed directly to a thermal polymerization or alkylation operation such as may be contemplated in the conversion process marked *D*. The rest of the diagram (*F* and *G*) consist of conventional fractionation equipment for separating the gas (and recycle gas), gasoline, and gas oil. The main fractionator (*F*) is operated at a pressure exceeding 200 lb. per sq. in. so that a liquid reflux can be produced at the top of the fractionator but the gasoline fractionator (*G*) can be operated at substantially atmospheric pressure.

Similarity in Practices

The similarity between the decomposition process for hydrocarbons and the standard cracking-plant practice should not be overlooked. In both processes the stock is decomposed and the extent of decomposition is limited to a low crack-per-pass in order to avoid polymerization or secondary reactions. In both processes, the active hydrocarbons produced by the decomposition must be eliminated, into cracked fuel oil in the cracking process, and by a conversion process (such as polymerization) in the hydrocarbon decomposition process. Finally, a recycle stock is produced in each process, a recycle gas oil in the cracking process and propane or excess butanes in the decomposition process. In fact, the decomposition process differs from a cracking process only in that a very low-boiling feed stock is employed and because higher temperatures and pressures are necessary.

An ultimate conversion of 50-60 per cent of butanes into unsaturated hydrocarbons can be produced by recycling, and in some plants even higher yields are being made. On a gas-volume basis, this amounts to 75-85 volumes of unsaturated gases produced from 100 volumes of feed gas. Approximate yields from 100 volumes of feed gas are:

	From butane	From isobutane	Average
Butenes	19.2	29.0	24.0
Propene	33.0	43.0	38.0
Ethene	30.0	5.5	18.0
	82.2	77.5	80.0
Propane	16.0	22.5	...
Ethane	33.5	5.5	...
Methane	49.0	65.5	...
Hydrogen	1.5	6.5	...
	182.2	177.5	180.0

At the present time no hydrocarbons except the butanes (and occasionally propane) have been used to any extent in commercial operations. This is the situation because the lighter hydrocarbons require extreme temperatures and pressures; and because the heavier hydrocarbons are already of the proper boiling range for incorporation to gasoline.

•

Thermal Efficiency of Cracking Plant

I would greatly appreciate it if you would give me a typical heat balance for the average-sized cracking plant operated primarily for the production of gasoline.—O. W. B.

The modern cracking plant is a complicated operation involving recycling of about three parts of a diluent stock, involving an operation for reducing the viscosity of the fuel oil that is produced, and requiring particular temperatures for conducting the cracking reaction and operating the fractionating equipment. For these reasons, the significance of a heat balance in the ordinary sense is somewhat obscure, but at least a heat balance can point the way to places in the system from which heat can be recovered.

For a 3,000-bbl. per day cracking plant, the total expenditure of heat in the way of fuel is about 60,000,000 B.t.u. per hour. The operations contemplated are cracking and viscosity breaking. For such a plant the furnace or pipe still behaves somewhat as follows:

Heat to oil:

	Per cent	
For reaction	19.8	
For viscosity reduction	8.1	
Sensible heat, etc.	43.2	
Total	71.1	71.1
Loss to stack		24.0
Unaccounted for		4.9
Heat liberation (based on net heating value)		100.0

Note that the percentages are based on the net rather than the gross heating value. The 60,000,000 B.t.u., or 100 per cent heat liberation, finds its way from the process about as follows:

	Per cent
Heat of reaction	19.8
Recovered by heat exchange or mixing	22.0
Useful or necessary heat expenditure	41.8
Furnace losses—stack and unaccounted for	28.9
To cooling water	25.2
Unaccounted-for losses	4.1
Heat liberation	100.0

Thus, the 25.5 per cent of heat that is going to cooling water is a heat quantity that can yet be removed and in many plants much of the 25.5 per cent is being recovered by topping crude oil, by utilizing reboilers on gas-recovery systems, etc.

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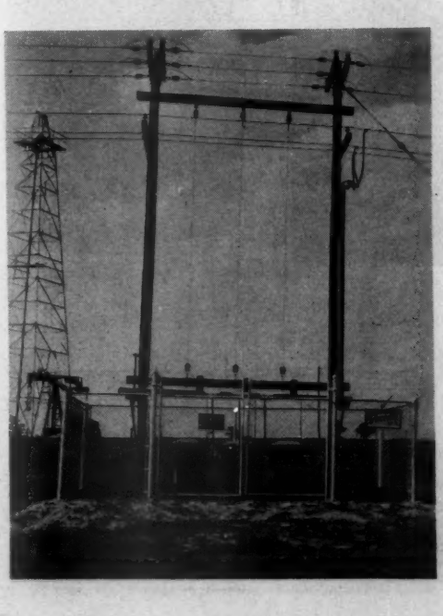
SAFETY - Guard Fence for Lease Transformers

ONE means employed to reduce the lifting costs of pumping properties has been the use of electricity to operate motors driving individual pumping units. This method is particularly useful in areas where the terrain or the location of the wells prevents the pumping of these wells through use of a centrally located geared or band-wheel power.

Current for driving the electric motors may be purchased from the utility companies operating in the area or may be manufactured at a centrally located plant. In either case, the transmission system is much the same, the current being carried to the different leases at high voltages and then stepped down for use at the well. In some cases a transformer bank is located at the center of four wells, lines carrying the reduced voltage current radiating out from this point.



While most leases are quite isolated and visitors, workmen and livestock are not numerous, means must be taken to protect them from coming in contact with wires and the transformers. Originally, oil companies installed the transformers on the poles but their location made it more difficult to test the equipment and effect repairs when necessary; there was also danger from windstorms, the poles holding the transformers being blown down quite often. This caused considerable damage and delay to the pumping operation.

The method now used by most operators is to install the transformers on wooden or concrete foundations. These are guarded by heavy-gage wire fences, the same as the transformer banks used by commercial electric companies along highways and in cities. The gate is kept locked at all times, the maintenance man keeping the key.

Enclosing the transformers in a fence prevents any accidents to children, curious passers-by and to livestock. It also protects the equipment. There is an added advantage in keeping the gate locked, for any time the pumper or the maintenance man opens the gate he is automatically reminded that he is approaching equipment that merits his respect and caution in handling it.

Novel Cleanout Machine On a Large Lease

By D. H. STORMONT

IN the Goldsmith field of Ector County, West Texas, one large oil company has a 22,000-acre lease upon which there are now almost 300 wells only a few of which have derricks erected over them. Therefore, to service and clean out these 4,200-ft. producers, the company recently built in its field shop the welded-pipe trailer shown in the accompanying photograph. The 50-ft. mast is of conventional make, but it is hinged at the bottom of each leg so that it folds back upon the trailer when being transported or can be raised to the vertical position when on location. Supports welded on the top of the trailer allow the mast to rest snugly upon the trailer and eliminate shifting.

A six-wheel truck, upon the bed of which a 75-hp. gasoline engine and draw works are installed, is used for pulling the trailer and mast about the field. While the overall length of the truck and trailer is too great to permit the machine to travel over public highways, this limitation will not hinder its usefulness due to the large number of wells the company owns upon the one lease.

The larger pipe forming the base and main members of the trailer is 6-in., the top members and some of the braces are 4-in. and the crossbraces are 3-in. Old pipe was used throughout, with all joints being welded and at all critical points added braces are welded.

In order that the end of the trailer would have sufficient clearance for traveling over the lease, and to allow adjustment of the height of the base of the mast when being placed in use at the well site, the trailer is divided at the trailer wheels. Two strips of flat steel are welded to each of the two uprights at the end of the first section, into each of which a row of four holes are bored so that a pin can be placed through them. By means of this and a tightening arrangement, consisting of two spindle screws, height of the end of the trailer is easily adjustable within about a 2-ft. limit.

Spotting the Trailer

When the trailer is spotted at the well site, with the A-frame in a reclining position, the rear end is centered on the well-head connections. A snubbing line is then passed through the rear end of the trailer and fastened tightly to two deadmen to prevent any shifting of the trailer from its original position. By means of a wire line running from the draw works through the pulley at the base of the mast and over the crown blocks, the mast is raised to its working position. As a safety measure, a wire line is fastened to the truck end of the trailer and to the top of the mast so that the frame cannot go beyond its slightly inclined position over the well. Guy wires are then strung from the top and middle of the A-frame to four deadmen. By adjustments of the guy wires, using boomers, the traveling block and elevator are spotted directly over the well head. The truck is easily detachable from the trailer if it is necessary that the latter be left at the well site overnight.

Left: Detail of trailer and mast construction at well in Goldsmith field

Below: Complete mast, trailer and truck with power-driven winch ready to pull tubing

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Rolling-In Heater Tubes Made Subject of Joint Investigation

THE advance of oil-refining technology is constantly demanding the use of higher temperatures and pressures and under these operating conditions the need for tight and strong roll joints between cracking-furnace tubes and headers has become increasingly apparent. This prompted joint research on the part of the Gulf Oil Corp., Timken Roller Bearing Co. and Key Co. at Canton, Ohio. Messrs. F. C. Braun, engineer for Gulf; Martin Fleischmann, metallurgical engineer for Timken; and E. A. Key, of the Key Co., supervised the tests. Six different types of steel ranging from straight carbon to 9 per cent Cr-Mo compositions were used and from 2 to 12 sections of tubing were used in each steel classification. The sample tubes were 2 ft. long, with one end upset, inside and outside, and machined to close tolerance, according to the dimensions specified by Gulf.

The following conclusions were drawn from a study of the resulting data:

The header material should be considerably harder than the tubing to assure well-developed shear points. Headers for the installation of alloy tubes with a maximum hardness of 163 Brinell should be heat-treated to a hardness of 229 Brinell minimum. In general it is recommended that the hardness of the header should exceed the hardness of the tubes by a minimum of 60 Brinell numbers.

Insufficient rolling or too much rolling will cause joints of doubtful quality. Too much expansion of the tube will result in an excessive flow of the tube material out of the header with the danger of shearing.

The use of wide-angle flaring rolls on the expander tool is discouraged as the flaring of the tube ends causes a longitudinal flow of the tube material endangering satisfactory shear points which had been formed by the expander rolls.

The common practice of rolling-in tubes just as they come from the mill (scale, irregular wall thickness and eccentric shapes) has, no doubt, been largely responsible for many of the joint failures, as well as increased end corrosion of the tubes.

The conclusions reached in this survey give tangible support to the belief that it is sound engineering practice to upset and machine to close tolerances tubes which are rolled into headers, keeping in mind the precautions that have been outlined in the conclusions reached through this survey.

Based upon this investigation, Mr. Braun has worked out definite specifications, including a chart showing the recommended expansion for a given-size tube end, upset and machined to close tolerances.

A new "rolling-in" tool has been developed, incoporating narrower-angle flaring rolls, as suggested by the investigation. This tool also is designed with definite settings corresponding to the predetermined, recommended expansions in sixty-fourths. This new tool should take much of the guesswork out of the rolling-in of tubes.

Personnel of Natural-Gasoline Companies

May 1, 1940

Abbreviations

Chm. Bd.—Chairman of Board
Pres.—President
V. P.—Vice President
Sec.—Secretary
Treas.—Treasurer
Gen. Mgr.—General Manager
Gen. Supt.—General Superintendent
Sales Mgr.—Sales Manager
Tank-Car S. M.—Tank-Car Sales Manager
Pur. Agt.—Purchasing Agent
Traf. Mgr.—Traffic Manager
Ch. Engr.—Chief Engineer
Supt.—Superintendent
Asst. Supt.—Assistant Superintendent
Ch. Chem.—Chief Chemist
Capacity—gallons per day

A

Airolene Gasoline Corp., Box 260, Shamrock, Tex.
One plant in Texas. Capacity, 2,000.

Akin Gasoline Co., 1801 National Bank of Tulsa Bldg., Tulsa, Okla.
J. H. McCoy, *Pres.* H. R. Johnson, *V. P., Sec.* and *Treas.* Plants in Oklahoma. Capacity, 16,000.

Aldon Gasoline Co., National Bank of Tulsa Bldg., Tulsa, Okla.
Hugh Ownby, *Pres.* Paul M. Raigorodsky, *V. P.* and *Sales Mgr.* Wilbur J. Holleman, *Sec.* and *Treas.* Paul Schaefer, *Gen. Supt* and *Pur. Agt.* E. W. Burt, Haven., Kans., *Plant Supt.* Plant in Kansas. Capacity, 10,000.

Alum Rock Gas Co., 78 Mill St., Port Allegany, Pa.
C. I. Crippen, *Pres.* J. H. Isherwood, C. R. Beddows, *V. P.s.* J. D. Forsyth, *Sec.* C. R. Beddows, *Treas.* E. H. Crippen, *Gen. Supt.* Plant in Pennsylvania. Capacity, 500.

American Liberty Oil Co., First National Bank Bldg., Dallas, Tex.
Toddie L. Wynne, *Pres.* C. W. Murchison, *V. P.* Rushton L. Ardey, *Sec.* and *Treas.* J. W. Bartlett, *Gen. Supt.*, Grapeland, Tex. L. P. Carter, *Sales Mgr.* R. L. Crockett, *Pur. Agt.* Plant in Texas. Capacity, 25,000.

American Oil Development Co., 1601 Oliver Bldg., Pittsburgh, Pa.
Harry S. Tack, *Pres.* Theodore E. Tack, *V. P.* Willis H. Siegfried, *Sec.* Augustus V. Tack, *Treas.* John Petty, Sistersville, W. Va.; George H. Hays, Robinson, Ill., *Plant Supts.* Six plants in West Virginia and Illinois. Now operating as repressuring plants.

Anco Gas Corp., 1110 Tower Petroleum Building, Dallas, Tex.
B. E. Byrd, *Pres.* W. O. Whiteside, *V. P.* and *Gen. Supt.* Margaret Clark, *Sec.-Treas.* H. U. Jarrett, *Plant Supt.*, Palestine, Tex. Plant in Texas. Capacity, 19,000.

Anzac Oil Corp., Coleman Office Bldg., Coleman, Tex.
M. G. Cheney, *Pres.* W. E. Stepp, *Sec.* and *Treas.* R. E. Alsop, *Gen. Supt.* M. G. Cheney and W. E. Stepp, *Sales Mgrs.* R. E. Alsop, *Pur. Agt. for plant*, Coleman, Tex. Plant in Texas. Capacity, 600.

Aqua Dulce Co., The, 2202 Alamo National Bldg., San Antonio, Tex.
J. Wood Glass, *Pres.* F. C. Henderson, *V. P.* E. P. Henderson, *Treas.* F. C. Hall, *Sec.* and *Pur. Agt.* C. P. Armstrong *Ch. Chem.* T. C. Shaw, *Ch. Engr.* Milton Cox, *Mgr. Gas Dept.* A. A. Eason, *Auditor.* George C. Bonecutter, T. C. Shaw, Robston, Tex., *Supts.* Plant in Texas. Capacity, 45,000.

Arab Gasoline Corp., 507 Exchange Bldg., Eastland, Tex.
Samuel Butler, *Pres.* P. T. Sharples, *V. P.* Walter E. Cox, *Sec.* and *Treas.* Franklin Dwyer, *Gen. Supt.* R. S. Railey, *Plant Supt.*, Eastland, Tex. Plant in Texas. Capacity, 25,000.

Arkansas Fuel Oil Co., Slattery Bldg., Shreveport, La.
T. W. Tutwiler, *Pres.* D. W. Harris, *V. P.* and *Gen. Mgr.* A. F. Holliday, J. A. Welch, *V. P.s.* J. S. Sheffield, *Sec.* M. J. Lasseigne, *Treas.* A. H. Weyland, *Gen. Supt.* E. P. Farmer, *Supt.* J. A. Welch, *Sales Mgr.* J. Lucas, *Pur. Agt.* A. W. Trusty, *Ch. Chem.* H. T. Goss, *Ch. Engr.* J. A. Ackman, Robinson, Ill.; D. N. Barrow, Waskom, Tex.; R. E. Biggs, Simsboro, La.; E. F. Brent, Jefferson, Tex.; J. R. Britt, Shreveport, La.; S. Cunningham, El Dorado, Ark.; H. F. Duckworth, Homer, La.; T. F. Gordon, Longview, Tex.; D. H. Huff, Ringgold, La.; A. J. MacKinnon, Jefferson, Tex.; J. I. Ramsey, Haughton, La.; F. E. Smithson, Vivian, La., *Plant Supts.* Plants in Louisiana, Illinois, Texas and Arkansas. Total capacity, 224,100.

B

Baico Gasoline Corp., 2005 Philtower Bldg., Tulsa, Okla.
A. E. Ballin, *Pres.* R. H. Bartlett, *V. P.* and *Treas.* D. M. Watson, *Asst. Sec.* A. M. Ballard, *Gen. Supt.* Plant in Oklahoma.

Bankline Oil Co., 634 South Spring St., Los Angeles, Calif.
John Barneson, *Pres.* H. J. Barneson, J. L. Barneson, Lionel T. Barneson, *V. P.s.* L. L. Aubert, *Gen. Mgr.* H. M. Paulsen, *Asst. to Gen. Mgr.* W. E. Kropp, *Sec.* R. C. Boroff, *Pur. Agt.* L. F. Moore, *Supt.*, 2603 E. Willow St., Signal Hill, Calif. Plant in California. Capacity, 25,000.

Barnsdall Oil Co., Calif. Div., Petroleum Bldg., Los Angeles, Calif.
E. B. Reeser, *Pres.* R. A. Broomfield, *V. P.* James A. Dunn, *Sec.* L. D. Messner, *Treas.* James Gilbert, *Gen. Supt.* Plant in California. Capacity, 24,000.

Barnsdall Oil Co., Petroleum Bldg., Tulsa, Okla.
E. B. Reeser, *Pres.* D. R. Snow, William C. Whaley, L. D. Messner, D. L. Frawley, R. A. Broomfield, James A. Dunn, E. M. Skeehan, *V. P.s.* James A. Dunn, *Sec.* L. D. Messner, *Treas.* H. W. Manley, *Gen. Supt.* Jay Weathers, *Sales Mgr.* O. E. McClatchey, *Pur. Agt.* J. T. Hayward, *Ch. Engr.* E. E. Troyer, Box 224, Avant, Okla.; J. O. Green, Box 36, Earlsboro, Okla.; G. R. Nicholas (Flat Rock plant), Box 37, Turley, Okla.; D. G. Miller, Box 1687, Odessa, Tex.; R. W. Shannon (Rainbow plant), Route 2, Box 173, Oxford, Kans.; Frank Chambers (White Oak plant), Box 156, Beggs, Okla., *Plant Supts.* Plants in Oklahoma, Kansas and Texas. Total capacity, 64,000.

Bartlett Gasoline Co., 406 Natl. Bank of Tulsa Bldg., Tulsa, Okla.
David A. Bartlett, Jr., *Pres.* Don E. Foster, *V. P.* C. H. McKnight, *Sec.* and *Treas.* Dean E. Foster, *Gen. Supt., Pur. Agt., Ch. Chem., Ch. Engr.*, Tulsa, Okla. E. W. Melling, *Supt.* George Kerr, *Asst. Supt.*, Box 467, Butler, Okla. Plant in Oklahoma. Capacity, 15,000.

Bayliss & Fasenmeyer, Titusville, Pa.
Plant in Pennsylvania. Capacity, 500.

Belridge Oil Co., 815 Edison Bldg., Los Angeles, Calif.
Burton E. Green, *Pres.* Frank H. Buck, H. L. Westbrook, F. B. Sutton, *V. P.s.* F. B. Sutton, *Sec.* H. L. Westbrook, *Treas.* C. E. Coleston, *Gen. Supt.* W. C. Wickersham, *Pur. Agt.* C. H. Peter, J. P. Ioppini, H. W. Graves, McKittrick, Calif.; F. E. Amburn, Taft, Calif., *Supts.* Plants in California. Total capacity, 145,000.

Big Lake Oil Co., 223 Fourth Ave., Pittsburgh, Pa.
J. C. Trees, *Pres.* W. S. Hallanan, *Ex. V. P.* C. E. Beyer, *V. P.* and *Gen. Mgr.* A. B. Daily, Jr., *V. P.* W. E. Huston, *Sec.* and *Treas.* R. E. Johnson, *Pur. Agt.* J. C. Moore, *Ch. Chem.* J. F. Sutton, *Ch. Engr.* C. C. Hickle, *Gen. Supt.*, Texon, Tex. Plant in Texas. Capacity, 50,000.

Blue Creek Oil & Gas Co., 207 Security Bldg., Charleston, W. Va.
George E. Thomas, *Pres.* D. T. McClure, *V. P.* G. E. Tribble, *Sec.* and *Treas.* G. W. McCamey, *Gen. Supt.* Plant in West Virginia. Capacity, 3,500.

Brenneman & MacDonell, 922 Lima Trust Bldg., Lima, Ohio.
A. D. MacDonell, *Agt.* (for E. L. E. Brenneman and Eugene McKay, trustees). E. R. Perfect, *Supt.*, Oblong, Ill. Plants in Illinois. Total capacity, 1,400.

Buckeye Natural Gasoline Corp., Grant Bldg., Pittsburgh, Pa.
A. E. Walker, *Pres.* A. B. V. Candler, *V. P.* and *Gen. Mgr.* W. P. Bateman, John M. Wilson, *V. P.s.* Robert W. Eller, *Sec.* Charles A. Meyer, *Treas.* E. C. Smith, *Gen. Supt.*, Magic City, Tex. N. E. Allen, *Pur. Agt.*, Tulsa. Earle M. Hughes, *Ch. Chem.* O. D. Hardaway, *Ch. Engr.* Plant in Texas. Capacity, 15,000.

B-W Gasoline Co., Livingston, Tex.
Lyle West and J. O. Bergman, co-partners, Livingston, Tex. Plant in Texas. Capacity, 4,000.

C

Cabot Carbon Co., 77 Franklin St., Boston, Mass.
Godfrey L. Cabot, *Pres.* R. G. Allen, Edmund Billings, Ralph Bradley, *V. P.s.* F. C. Fernald, *Sec.* Thomas D. Cabot, *Treas.* F. M. Neely, *Gen. Supt.* O. M. Prigmore, *Pur. Agt.* Plants in Texas. Capacity, 40,000.

Canadian River Gas Co., Colorado Springs, Colo.
N. K. Moody, *Pres.*, Tulsa, Okla. P. C. Spencer, New York; Albert R. Jones, Kansas City, Mo., R. E. Wertz, Amarillo, Tex., *V. P.s.* George Baird, New York, *Sec.* and *Treas.* J. O. Shields, *Asst. Treas.*, Colorado Springs, Colo. R. A. Ford, *Gen. Supt.*, Amarillo, Tex. - L. B. Whitefield, *Pur. Agt.*, Colorado Springs, Colo. J. H. Hallenberger, *Ch. Chem.*, Amarillo, Tex. G. F. Brunston, *Ch. Engr.*; Robert W. Hendee, *Gen. Mgr.*, Colorado Springs, Colo. L. W. Jackson, *Supt.*, Channing, Tex. Plant in Texas. Capacity, 30,000.

Cannon Gasoline Co., Box 963, Amarillo, Tex.
J. J. Hastings, *Pres.* J. B. Dooley, *Sec.* F. J. Storm, *V. P., Treas.* and *Pur. Agt.* Plant in Texas. Capacity, 5,000.

Carbide and Carbon Chemicals Corp., 30 East 42nd St., New York.
J. A. Rafferty, *Pres.* Dr. G. O. Curme, Jr., H. E. Thompson, Dr. J. G. Davidson, J. W. McLaughlin, R. W. White, *V. P.s.* A. C. Cornell, *Sec.* P. F. Smith, *Treas.* R. N. Graham, *Gen. Supt.* W. F. Reich, Jr., *Sales Mgr.* W. F. Ackerman, *Pur. Agt.* G. V. Scofield, *Ch. Chem.* C. S. Dunn, *Ch. Engr.* C. M. Stuter, Hastings, W. Va.; F. W. Hineline, Diamond, W. Va., *Supts.* Plants in West Virginia. Capacity, 3,500.

Cargray Corp., 801 Amarillo Bldg., Amarillo, Tex.
D. D. Harrington, *Pres.* Stanley Marsh, L. R. Hagy, *V. P.s.* Beaumont Stinnett, *Sec.* and *Treas.* I. Earl Nutter, *Gen. Supt.* C. F. Free, S. F. Wetherall, White Dear, Tex., *Supts.* Plant in Texas. Capacity 100,000.

Carnegie Natural Gas Co., 962 Frick Annex, Pittsburgh, Pa.
S. W. Meals, *Pres.* J. W. Hamilton, *Sec.* H. E. Jeffries, *Treas.* H. J. Hess, *Gen. Supt.* Plants in Pennsylvania and West Virginia. Capacity, 11,800.

Carpenter, M. A., Individual Operator, Kane City, Pa.
Plant in Pennsylvania. Capacity, 120.

Carter Oil Co., The, Natl. Bank of Tulsa Bldg., Tulsa, Okla.
J. J. Conry, *Pres.* L. F. McCollum, O. C. Schorp, L. G. Owen, *V. P.s.* Forrest M. Darrough, *Sec.* W. M. Barnhill, *Asst. Treas.* George E. Edgett, *Gen. Supt.* H. F. Miller, *Sales Mgr.* J. R. Freeman, *Pur. Agt.* S. F. Mauney, Jr., *Ch. Chem.* I. S. Salnikov, *Ch. Engr.* Clyde Randalls, Box 997, Seminole, Okla.; W. T. Mills, Route 2, Stonewall, Okla.; P. A. Ratliff, Box 8, Cromwell, Okla.; William Brown, Box 43, St. Elmo, Ill., *Supts.* Plants in Oklahoma and Illinois. Capacity, 107,000.

Central States Production Corp., Oklahoma Bldg., Tulsa, Okla.
Paul K. Sticelber, *Pres.* A. H. Burgess, *Supt.*, Henryetta, Okla. Plant at Wetumka, Okla. Leased and operated by Otha H. Grimes. Capacity, 2,800.

Clinger Oil & Gas Co., Tidioute, Pa.
George Clinger and W. F. Clinger, *Partners.* A. E. Merkle, *Sec.* J. E. Peterson, Tidioute, Pa.; Charles M. Nason, Trumans, Pa., *Plant Supts.* Two plants in Pennsylvania. Capacity, 2,000.

Cities Service Oil Co. (Del.), Bartlesville, Okla.
H. R. Straight, *Pres.* A. W. Ambrose, *V. P.* E. L. Peck, *Mgr. Nat. Gaso. Div.* C. E. Murray, *Sec.* Lloyd Lynd, *Asst. Treas.* H. A. Ells, *Gen. Supt.* S. B. Crooks, *Sales Mgr.* Harris Bateman, *Pur. Agt.* J. C. Walker, *Ch. Chem.* L. A. Webster, A. E.

Wakefield, Burrton, Kans.; D. G. Thoes, Wichita, Kans.; W. H. Yingling, Arkansas City, Kans.; G. F. Downs, Tallant, Okla.; W. H. Tillock, L. L. Grubb, J. F. Hodge, Seminole, Okla.; J. A. Dowler, Konawa, Okla.; C. E. Powell, Asher, Okla.; G. B. Wooster, Wewoka, Okla.; V. F. Hobart, Sasakwa, Okla.; J. L. Sperry, Pampa, Tex.; I. L. Fletcher, Odessa, Tex., *Supts.* C. F. Fischer, Wewoka, Okla.; Dick Rodgers, Wichita, Kans., *Dist. Supts.* Plants in Oklahoma, Kansas and Texas. Capacity, 319,500.

Clymore Co., Inc., The, 1204 Alamo Natl. Bldg., San Antonio, Tex.

Garland Clymore, *Pres.*, San Antonio, Tex. R. S. Wyrick, *V. P.*, Refugio, Tex. B. S. Fenlaw, *Sec.*; R. C. Willett, *Treas.*, San Antonio, Tex. R. S. Wyrick, *Gen. Supt.* V. A. Goss, *Ch. Chem.*, Refugio, Tex. Plant in Texas. Capacity, 20,000.

Cochran, John G., & Co., 676 W. Main, Sheffield, Pa.

John G. Cochran, *Mgr.* J. C. Curtin, Sheffield, Pa. *Plant Supt.* One plant in Pennsylvania. Capacity, 1,100.

Colins Gasoline Corp., Kirckhoff Bldg., Los Angeles, Calif.

J. H. Keefe, *Pres.*, Chicago, Ill. F. C. Ripley, Los Angeles, Calif.; R. D. Lutton, Chicago, Ill., *V. P.s.* J. E. Jones, *Sec.* and *Treas.*, Topeka, Kans. H. E. Moulton, *Gen. Supt.*, Los Angeles, Calif. J. L. Black, D. R. Van Gorder, Ventura, Calif., *Supts.* Plants in California. Capacity, 47,000.

Coltexo Corp., 41 East 42nd St., New York.

Reid L. Carr, *Pres.* George L. Bubb, *V. P.* and *Treas.* W. D. Ahearn, *Sec.* H. E. Means, *Gen. Supt.* F. M. Cox, Rodessa, La.; J. P. Cox, Lefors, Tex., *Supts.* Plants in Louisiana and Texas. Capacity, 132,000.

Cone Oil Co., 11161 Cashmere St., Los Angeles, Calif.

Carl P. Coloneus, *owner.* M. O. White, *Supt.*, 614 Raymond St., Hawthorne, Calif. Plant in California. Capacity, 2,000.

Cook Oil Lease, E. S. Collins, Owner, Kellettville, Pa.

E. S. Collins, *Pres.*, Kellettville, Pa. F. R. Klinestiver, *V. P.*, Nebraska, Pa. James E. Flynn, *Sec.* F. Lee Dunkle, *Gen. Supt.* F. R. Klinestiver, *Sales Mgr.* and *Pur. Agt.* Perry M. Howard, *Ch. Engr.* Plant at Mayburg, Pa. Capacity, 153.

Consolidated Gasoline Co., Cisco, Tex.

A. S. Hickok, *Pres.* C. F. Eisenhour, *Sec.* and *Treas.* R. L. Ponsler, *Gen. Supt.* E. N. Francis, *Ch. Chem.* Lon Horn, *Ch. Engr.* and *Plant. Supt.*, Eastland, Tex. Plant in Texas. Capacity, 10,000.

Continental Oil Co., Continental Bldg., Ponca City, Okla.

Dan Moran, *Pres.* W. W. Bruce. R. E. Collom, J. G. Dyer, W. H. Ferguson, Harry J. Kennedy, Walter Miller, G. F. Smith, *V. P.s.* James J. Cosgrove, *Sec.* G. F. Smith, *Treas.* R. A. Carter, *Supt.* O. B. Lloys, *Gen. Sales Mgr.* G. W. Evans, *Gen. Pur. Agt.* B. H. Lincoln, *Ch. Chem.* M. E. Clawson, *Ch. Engr.* Gill Boatman, Billings, Okla.; A. L. Collins, Benavides, Tex.; P. F. Elmore, Villa Platta, La.; A. E. Crouse, C. R. Freel, Basile, La.; J. N. Garritson, Hobbs, N. M.; R. G. Kennelly, Lance Creek, Wyo.; R. A. Noah, D. M. Brown, Electra, Tex.; J. E. Storts, Lake Charles, La., *Supts.* Plants in Texas, New Mexico, Louisiana, Oklahoma and Wyoming. Capacity, 192,000.

Cowan Oil & Refining Co., 215 W. Seventh St., Los Angeles, Calif.

John A. Arnold, *Pres.* Arnold Holden, *V. P.* W. G. Howard, *Sec.* and *Treas.* Plants in California. Capacity, 49,000.

Crosbie, J. E., Inc., 1810 Natl. Bank of Tulsa Bldg., Tulsa, Okla.

W. B. Moran, *Pres.* C. H. Sweet, *V. P.* M. E. Church, *Sec.* C. H. Sweet, *Treas.* A. W. Dwen, *Gen. Supt., Pur. Agt., Ch. Engr.* F. L. Smith. *Ch. Chem.* D. B. Young, *Supt.*, P. O. Box 5, Fittstown, Okla. Plant in Oklahoma. Capacity, 50,000.

D

Danciger Oil & Refineries, Inc., Waggoner Bldg., Fort Worth, Tex.

Dan Danciger, *Pres.* Joseph Danciger, Jack Danciger, A. Danciger, *V. P.s.* J. E. Vaeth, *Sec.* Joseph Danciger, *Treas.* L. R. Brammer, *Sales Mgr.* G. B. Magruder, Jr., *Pur. Agt.* Lysle Owen, *Ch. Chem.* Guy Barritt, Danciger, Tex.; G. W. Hesse, Lefors, Tex., *Supts.* Plants in Texas. Capacity, 60,000.

Darby-Lynde Co., The, Philtower Bldg., Tulsa, Okla.

J. F. Darby, *Pres.* C. F. Lynde, *V. P.* William Hendrick, *Sec.* and *Treas.* J. R. Gilbert, *Gen. Supt.*, Electra, Tex. Plants in Texas. Capacity, 5,000.

Daugherty, C. R., & Co., Willard Hotel, Butler, Pa.

C. R. Daugherty and M. G. Daugherty, *Partners.* O. R. Daugherty, *Mgr.* H. C. Connelly, *Supt.* Plants in Texas and Pennsylvania. Capacity, 95.

Davis, W. R., Inc., 1322-40 Commerce Bldg., Houston, Tex.

W. R. Davis, *Pres.* Henry W. Wilson, E. F. Wehrle, Paul J. Fly, W. G. Prince, G. J. Vander Lyn, *V. P.s.* William C. Blind, *Sec.* John H. Burns, *V. P.* and *Treas.* W. W. Van Allen, *Asst. Sec.* and *Asst. Treas.* S. C. Wollmar, *Comptroller.*

Deep Oil Development Co., 201 City Natl. Bank Bldg., Wichita Falls, Tex.

J. T. Harrell, *Pres.* John W. Thomas, *V. P.* and *Gen. Mgr.* John C. Coffey, *Sec.* and *Treas.* L. F. Cox, *Pur. Agt.* W. G. Palmer, *Ch. Chem.* and *Ch. Engr.* A. S. Lavender, Box 701, Archer City, Tex.; O. H. Stanbrough, Box 39, Kamay, Tex., *Supts.*

Deep Rock Oil Corp., Atlas Life Bldg., Tulsa, Okla.

R. K. Huey, *Gen. Supt.* B. L. Majewski, *Sales Mgr.* R. G. Martin, *Pur. Agt.* B. C. Frichot, *Ch. Chem.* R. G. Davis, Ch. Engr. Plant in Oklahoma. Capacity, 1,000.

Del Rey Oil & Gas Co., Washington St. and Beach Ave., Venice, Calif.

J. A. Crawford, *Pres.* F. A. E. Lowell, *V. P.* A. E. Schiltz, *Sec.* F. A. E. Lowell, *Gen. Supt.* Plant in California. Capacity, 60,000.

Del Rey Petroleum Co., Esperson Bldg., Houston, Tex.

R. R. Dean, *Pres.* W. D. Moorer, *V. P.* H. S. Medlin, *Sec.* and *Treas.* L. E. Cooper, *Gen. Supt.* R. R. Dean, *Sales Mgr.* and *Pur. Agt.* Lyman Helveston, *Ch. Chem.* L. E. Cooper, *Supt.*, Liberty, Tex.

Dempseytown Gas Co., 78 Mill St., Port Allegany, Pa.

C. I. Crippen, *Pres.* J. H. Isherwood, C. R. Beddows, *V. P.s.* E. H. Crippen, *Gen. Supt.* J. D. Forsyth, *Sec.* C. R. Beddows, *Treas.* Plant in Pennsylvania. Capacity, 265.

Desdemona Gasoline Co. of Texas, 504 Capps Bldg., Fort Worth, Tex.

W. F. MacDermott, *Pres.* Floyd Evans, *V. P.* M. B. Todd, *Sec.* W. F. MacDermott, *Treas.* D. H. Moss, *Gen. Supt.*, Desdemona, Tex. Plant in Texas. Capacity, 3,000.

Devonian Oil Co., 1705 Natl. Bank of Tulsa Bldg., Tulsa, Okla.

A. W. Leonard, *Pres.* L. C. Ritts, *V. P.* George D. Foster, *Sec.* L. C. Ritts, *Treas.* E. S. Calvert, *Gen. Supt.* H. R. Dean, *Pur. Agt.* W. A. Fosburgh, *Supt.*, Box 106, Kellyville, Okla. Plant in Oklahoma. Capacity, 20,000.

Dinsmoor & Co., 702 Second St., St. Marys, W. Va.

W. P. Kerwood, Jr., *Pres.* F. K. Sellers, *V. P.* Denton Dinsmoor, *Sec.* Mariana B. Dinsmoor, *Treas.* D. H. Israel, *Gen. Supt.* W. P. Kerwood, Jr., *Pur. Agt.* Clifford Haddox, Route 2, St. Marys, W. Va.; C. W. Casey, Route 1, St. Marys, W. Va.; E. C. Boley, Harry Brothers, Route 35, St. Marys, W. Va.; Charles Colvin, C. C. Cunningham, Ira North, J. F. Kelley, Route 39, St. Marys, W. Va. Plants in West Virginia.

Duval Gasoline Co., Second Natl. Bank Bldg., Houston, Tex.

D. W. Hovey, *Pres.*, Paul G. Benedum, *V. P.* E. L. Sauer, *Sec.* and *Treas.* R. H. Armstrong, *Pur. Agt.* D. S. Wallace, *Gen. Supt.*, Benavides, Tex. Plant in Texas. Capacity, 20,000.

E

Eason Oil Co., Bass Bldg., Enid, Okla.

T. T. Eason, *Pres.* L. D. Hiuman, *V. P.* T. W. Eason, *Sec.* and *Treas.* B. Widener, *Gen. Supt.* R. H. Rowland, *Sales Mgr.* A. C. Hatton, *Pur. Agt.* G. B. Lyons, *Ch. Chem.* W. H. Taft, *Ch. Chem.* Plant in Oklahoma.

East Texas Refining Co., Tower Petroleum Bldg., Dallas, Tex.

F. W. Burford, *Pres.* John J. Thomas, *V. P.* John R. Scott, *Sec.* E. V. Campbell, *Treas.* C. N. Watts, *Gen. Supt.* A. L. Heine, *Sales Mgr.* W. M. Bisett, *Pur. Agt.* C. H. Merritt, *Plant Supt.*, Rodessa, La. Capacity, 8,000.

Edwards, Eddie O., R.F.D. 2, Titusville, Pa.

Plant in Pennsylvania. Capacity, 170.

Ellenberger & Sons, Wm. J., R.F.D. 1, Karns City, Pa.

Plant in Pennsylvania. Capacity, 300.

Elliott Bros., R.F.D. 2, Chicora, Pa.

Plant in Pennsylvania. Capacity, 500.

El Paso Natural Gas Co., 1010 Bassett Tower, El Paso, Tex.

Paul Kayser, *Pres.* C. C. Cragin, A. L. Forbes, Jr., *V. P.s.* J. E. Franey, *Sec.-Treas.* L. A. Beaird, *Gen. Supt.*, Jal, N. M. H. A. Jones, *Pur. Agt.* A. A. Cohn, *Ch. Chem.*, Jal, N. M. J. F. Eichelmann, *Ch. Engr.* L. T. Nix, *Ch. Opr.*, Jal, N. M. Plants in New Mexico. Capacity, 130,000 (90,000 joint operation with Phillips Petroleum Co.).

Equitable Gas Co., 435 Sixth Ave., Pittsburgh, Pa.

F. R. Phillips, *Pres.* P. H. McCance, *Senior V. P.* F. F. Schauer, *V. P.* and *Gen. Mgr.* Joseph McKinley, *V. P. in Chg. of Sales.* W. B. Carson, *Sec.* H. D. Megahan, *Treas.* Judson Bonsall, *Supt of Comp. Stations.* C. W. Lepper, *Pur. Agt.* F. B. Saunders, *Controller.* George M. Myers, Rogersville, Pa.; P. E. Jackson, Route 1, Clarksville, Pa., *Supts.* Plants in Pennsylvania. Capacity, 12,000.

F

Field, O. C., Gasoline Corp., 944 Wilshire Blvd., Los Angeles, Calif.

O. C. Field, *Pres.* J. C. Burks, W. G. Metson, *V. P.s.* N. J. Hale, *Sec.* R. B. Hale, *Treas.* A. L. Henrickson, *Gen. Supt.* A. L. Henrickson, John Webster, Huntington Beach, Calif.; D. A. Cushman, Montebello, Calif., *Supts.*

Fleming, J. E., 623 N. Perry, Titusville, Pa.

J. E. Fleming, *Pres.* George Miller, *Gen. Supt.* C. W. Nobles, *Ch. Engr.* George Miller, *Supt.*, Grand Valley, Pa. Plant in Pennsylvania. Capacity, 100.

Forest Chemical Co., Sheffield, Pa.

C. R. McNeal, *Pres.* and *Treas.* C. F. McNeal, *V. P.* and *Sec.* Plant in Pennsylvania. Capacity, 500.

G

General Petroleum Corp. of California, 1003 Higgins Bldg., Los Angeles, Calif.

A. L. Weil, *Pres.* R. A. Sperry, B. E. Parsons, S. J. Dickey, A. H. DeFriest, E. L. Adams, *V. P.s.* D. W. Woods, *Sec.* W. Cunningham, *Treas.* R. C. Wheeler, *Mgr. Gas Dept.* A. H. DeFriest, *Dir. of Mktg.* G. F. Olsen, *Mgr. Lab.* E. W. Beck, *Pur. Agt.* V. F. Grace, *Mgr. Engr. Dept.* P. S. Magruder, *Supt.*, 2525 E. Thirty-seventh St., Vernon, Calif. Plants in California. Capacity, 200,000.

Gilmore-Dabney, Inc., 2423 E. Twenty-eighth St., Los Angeles, Calif.

Earl B. Gilmore, *Pres.* Milton H. Philleo, *V. P.* C. S. Beesemyer, *Sec.* and *Treas.* H. L. Eggleston, *Gen. Supt. Gaso. Plant.* J. L. Coates, *Sales Mgr.* D. H. F. McPherson, *Pur. Agt.* L. R. Schandoney, *Ch. Chem.* E. Newman, *Ch. Engr.* W. Shellshear, Long Beach, Calif., *Plant Supt.* One plant in California. Capacity, 30,000.

Glacier Production Co., Electric Bldg., Butte, Mont.

F. W. Bird, *Pres.* F. M. Kerr, *V. P.* R. D. Smith, *Supt.* S. P. Hogan, *Sec.* J. R. Thomas, *Treas.* C. D. Warner, *Sales Mgr.* W. T. Jackson, *Pur. Agt.* Dean Humphrey, *Ch. Chem.* H. H. Cochrane, *Ch. Engr.* E. M. Parkin, *Supt.*, Cut Bank, Mont. Plant in Montant. Capacity, 15,000.

Glen Rose Gasoline Co., 311 Natl. Bank of Tulsa Bldg., Tulsa, Okla.

M. H. Marr, *Pres.* Paul M. Raigorodsky, *V. P.* and *Sales Mgr.* R. A. Bristol, *Sec.* and *Treas.* Paul Schaefer, *Gen. Supt.* F. C. Boston, *Ch. Chem.* J. M. Temple, *Ch. Engr.* Plant in Louisiana. Capacity, 30,000.

Gould, Nancy E. and Son, Route 6, Butler, Pa.

Floyd B. Gould, *Gen. Supt.* Plant at Butler, Pa.

Great National Oil Corp., 715 City Bank Bldg., Shreveport, La.

J. T. Means, Jr., *Pres.* C. R. Braswell, *V. P.* Miss E. L. Cade, *Sec.* and *Treas.* Plant in Louisiana. Capacity, 15,000.

Gregg-Tex Gasoline Corp., Glover-Crim Bldg., Longview, Tex.

Clark Sample, *Pres.* Charles Cobb, Jr., *V. P.* and *Treas.* W. Bruner Smith, *Sec.* S. W. Reily, *Asst. Sec.* C. E. Wharton, *Gen. Supt.* M. M. Bason, *Ch. Chem.* J. R. Epperson, *Ch. Engr.* H. J. DeLatin, *Supt.*, Box 1912, Longview, Tex. Plant in Texas. Capacity, 125,000.

Grimes, Charles W. and Otha H., 902 Kennedy Bldg., Tulsa, Okla.

Otha H. Grimes, *Gen. Supt. Gaso. Plants.* W. O. Kinsey, Box 533, Okemah, Okla.; Joe Gibson, Weleetka, Okla., *Supts.* Plants in Oklahoma. Capacity, 7,800.

Grimes, Otha H., 902 Kennedy Bldg., Tulsa, Okla.

Otha H. Grimes, *Pres.* R. F. Chisholm, *Gen. Supt.* Box 231, Mount Pleasant, Mich. R. H. Beattie, F. J. Little, Box 231, Mount Pleasant; T. L. Fleming, Box 125, Temple, Mich., *Supts.* Plants in Michigan and Oklahoma. Capacity, 34,000.

Grimes, Otha H., & Roy O. Neal, Box 327, Tulsa, Okla.

Otha H. Grimes, *Pres.* Roy O. Neal, *V. P.* L. Carter,

Treas. A. L. Cash, *Gen. Supt.* Roy O. Neal, *Ch. Engr.* A. L. Cash, *Supt.*, Box 21, Drumright, Okla. Plant in Oklahoma. Capacity, 5,300.

Gulf Oil Corp., First Natl. Bank Bldg., Tulsa, Okla.

Rush Greenslade, *V. P.* D. B. Catterlin, *Asst. Sec.* C. B. Clothier, *Asst. Treas.* S. G. Sanderson, *Gen. Supt.* H. F. Brindel, *Supt. Gaso. Plant.* V. C. Fuller, *Pur. Agt.* Plants in Oklahoma. Capacity, 73,200.

Gulf Refining Co., Box 1166, Pittsburgh, Pa.

J. F. Drake, *Pres.* H. A. Gidney, *V. P.* David Proctor, *Sec.* J. E. Nelson, *Treas.* C. T. Marsh, *Pur. Agt.* Plants in Arkansas, Louisiana, and Texas. Capacity, 62,000.

H

Hamman Exploration Co., 2131 San Felipe Road, Houston, Tex.

John Hamman, *Pres.* John Hamman, Jr., George F. Hamman, *V. P.s.* Miss Jack Phillips, *Asst. Sec.* Roy W. Machen, *Gen. Supt.*, P. O. Box 1308, Bay City, Tex. Plant in Texas. Capacity, 12,000.

Hanlon Gasoline Co., 718 National Bank of Tulsa Bldg., Tulsa, Okla.

E. I. Hanlon, *Pres.* J. H. Boyle, D. E. Buchanan, *V. P.* J. H. Boyle, *Sec.* and *Treas.* C. E. Wharton, *Gen. Supt. Gaso Plant.* R. E. Miller, *Sales Mgr.* R. W. Webber, *Ch. Chem.* A. A. Hardee, Breckenridge, Tex., *Plant Supt.* One plant in Texas. Capacity, 60,000.

Hanlon Gasoline Corp. of Texas, 718 National Bank of Tulsa Bldg., Tulsa, Okla.

E. I. Hanlon, *Chm. Bd.* J. H. Boyle, *Pres.* D. E. Buchanan, *V. P.* J. H. Boyle, *Sec.* and *Treas.* R. E. Miller, *Sales Mgr.* C. E. Benham, *Ch. Chem.* C. E. Wharton, Gladewater, Tex., *Plant Supt.* One plant in Texas. Capacity, 150,000.

Hapgood, Roswell T., & Co., 207 Security Bldg., Charleston, W. Va.

Roswell T. Hapgood, George E. Thomas, and B. F. Cohen, *partners.* G. E. Tribble, *Sec.* and *Treas.* D. T. McClure, *Supt.* Plant in West Virginia. Capacity, 6,000.

Haskell Bros., Pleasantville, Pa.

William A. Haskell, *Supt.* Plant in Pennsylvania. Capacity, 100.

Haskell, Roth & Bayliss, Titusville, Pa.

George E. Bayliss, *Supt.* Plant in Pennsylvania. Capacity, 1,000.

Henderson, F. C., & E. P., 2202 Alamo Natl. Bldg., San Antonio, Tex.

F. C. Henderson, *Pres.* J. Wood Glass, *V. P.* F. C. Hall, *Sec.* E. P. Henderson, *Treas.* T. C. Shaw, *Ch. Engr.* C. A. Seiple, *Supt.*, P. O. Box 14, Sanford, Tex.

Hercules Gasoline Co., 530 Giddens-Lane Bldg., Shreveport, La.

E. R. Ratcliff, *Pres.* J. Pat Beaird, *V. P.* M. F. Johnson, *Sec.* and *Treas.* H. D. McLean, *Gen. Supt.* M. M. Dworkin, *Ch. Chem.* J. A. Powell, *Ch. Engr.* Plant in Tex. Capacity, 85,000.

Honolulu Oil Corp., 215 Market St., San Francisco, Calif.

A. C. Mattei, *Pres.* L. A. Cranson, P. F. Brown, W. P. Roth, A. P. Welch, *V. P.s.* R. H. Wright, *Sec.* W. P. Roth, *V. P.* and *Treas.* W. H. Kraft, *Foreman.* O. E. Cunningham, *Pur. Agt.* R. G. Rogers, *Ch. Engr.* Warren H. Kraft, *Supt.*, P. O. Bin H, Taft, Calif. Plants in California. Capacity, 60,000.

Hope Construction & Refining Co., 445 W. Main St., Clarksburg, W. Va.

L. L. Tonkin, *Pres.* J. C. Chisler, *V. P.* and *Treas.* S. E. W. Burnside, *Sec.* H. R. Livingston and J. C. Cross, *Asst. Treas.* Denton Borger, *Asst. Sec.* O. O. Perry, *Gen. Supt.*, West Virginia plants. A. C. Perry, *Gen. Supt.*, Pennsylvania plants. Dr. R. W. Miller, *Sales Mgr.* and *Ch. Chem.* Fred E. Benkert, *Pur. Agt.* John A. Clark, *Ch. Engr.* E. M. Lazear, Sistersville, W. Va.; Walter O. Sayre, Bristol, and Salem, W. Va.; Ernest Wilson, Corton, W. Va.; Clyde G. Robinson, Clarksburg, W. Va.; Okey G. Grim, Hastings, W. Va.; J. F. Villers, Valley Chapel, W. Va.; Charles Johnson, Waverly, W. Va.; William E. Cornell, Rinard Mills, Ohio; Jesse A. Eddy, Brave, Pa.; George R. Gibson, Imperial, Pa., *foremen.* Plants in West Virginia, Ohio and Pennsylvania. Capacity, 116,300.

Huber, J. M., Corp., Borger, Tex.

H. W. Huber, *Pres.* H. W. Price and Walter David Emeckhart, *V. P.s.* Walter Huber, *Sec.-Treas.* D. H. Mathews, *Gen. Supt.*, Palestine, Tex. Charles Glinther, *Pur. Agt.* John Lehr, *Ch. Chem.* H. W. Price, *Ch. Engr.* Plant in Texas. Capacity, 27,000.

Humble Oil & Refining Co., Humble Bldg., Houston, Tex.

H. C. Wiess, *Pres.* John O. Sue, *Gen. Supt.* R. E.

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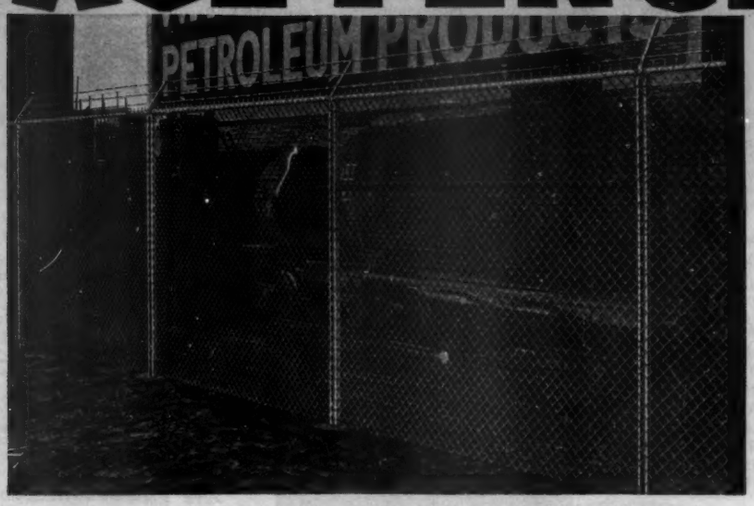

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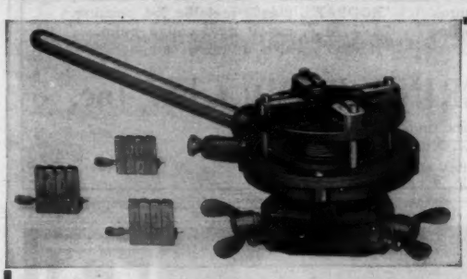

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I

Indian Territory Illuminating Oil Co., Bartlesville, Okla.

Burdette Blue, *Pres.* R. L. Morton, A. V. Hoenig, C. H. Caldwell, R. L. Gordon, *V. P.s.* E. B. Emenhiser, *Sec.* C. H. Caldwell, *Treas.* T. A. Stevens, *Gen. Supt.* C. M. Taylor, *Pur. Agt.* Frank Allen, *Ch. Chem.* C. D. McReynolds. H. P. Wingo, Capital Hill Station, Oklahoma City, Okla., *Supts.* Plants in Oklahoma. Capacity, 100,000.

Inglewood Gasoline Co., 816 West Fifth St., Los Angeles, Calif.

E. H. Bashaw, *Pres.* and *Treas.* Clarence H. Evans, *V. P.* William E. Butler, *Sec.* Karl G. Steinbeck, *Plant Supt.* One plant in California. Capacity, 12,000.

Italo Petroleum Corp. of America, 301 Sutter St., San Francisco, Calif.

J. W. Pauson, *Pres.* A. J. Scampini, R. A. Earle, *V. P.s.* R. J. Sunderhauf, *Sec.* Hugh K. McKevitt, *Treas.* R. A. Earle, *Gen. Supt.* J. E. Bradley, *Pur. Agt.* Glenn Fischer, *Supt.*, Box 57, Coalinga, Calif. Plant in California. Capacity, 300.

J

Jennings Bros. Co., E. H., 608 Columbia Bldg., Pittsburgh, Pa.

R. G. Jennings, *Pres.* E. D. Jennings, *V. P.* E. H. Jennings, *Sec.* R. G. Jennings, *Treas.* Plants in Pennsylvania. Capacity, 2,250.

K

Kansas Power & Light Co., The, 800 Kansas Ave., Topeka, Kans.

D. E. Ackers, *Pres.* C. E. Brock, Salina, Kans.; E. D. Bell, Abilene, Kans., *V. P.s.* H. E. Johnson, St. Louis, Mo., *Sec.* and *Treas.* Two plants in Kansas. Capacity, 20,000.

Kapp & Brochlshurst, Tidioute, Pa.

F. E. Kapp, *Gen. Supt.* Plant in Pennsylvania. Capacity, 100.

Kewanee Oil Co., 2317 Fidelity-Phila. Trust Bldg., Philadelphia, Pa.

William M. Potts, *Pres.* R. B. Ashenfelter, *Sec.* and *Treas.* F. B. Howland, *Gen. Mgr.* T. B. Steele, Robinson, Ill., *Plant Supt.* Plant in Illinois. Capacity, 300.

Knox Refining Co., 1008 Broadway Tower, Enid, Okla.

Charles E. Knox, *Pres.* and *Gen. Supt.* Roy E. Raemer, *Pur. Agt.* H. J. Lane, *Supt.*, Rt. A, Box 55, Graham, Tex. Plant in Texas. Capacity, 2,500.

L

La Salle Petroleum Co., 612 Wright Bldg., Tulsa, Okla.

Phil D. Williams, *Trustee.* W. J. Schnur, *Agt.* Phil D. Williams, *Gen. Supt.*, P.O. Box 576, Burkburnett, Tex. F. A. Jamieson, *Sales Mgr.* Plant in Texas (shut down).

Lisbon Gasoline Co., Inc., 229 Ricou-Brewster Bldg., Shreveport, La.

O. J. Dykes, *Pres.* D. W. Harris, *V. P.* T. J. Heard, *Sec.* B. R. Muirhead, *Treas.* D. L. Edmondson, *Supt.*, Box 464, Henderson, Tex. Plants in Texas. Capacity, 60,000.

Lomita Gasoline Co., 2901 Orange Ave., P. O. Drawer 851, Long Beach, Calif.

C. M. Cotton, *Pres.* F. S. Wade, A. A. Jergin, *V. P.s* L. V. Cassaday, *Sec.* and *Gen. Mgr.* F. S. Wade, *Treas.* M. S. Hubbell, *Gen. Supt.* J. B. Bucklen, *Pur. Agt.* H. A. Kuster, *Supt.*, P.O. Drawer 851, Long Beach, Calif. Plants in California. Capacity, 110,000.

Lone Star Gas Co., 1915 Wood St., Dallas, Tex.

D. A. Hulcy, *Pres.* E. F. Schmidt, R. A. Crawford, *V. P.s.* T. J. Uhl, *Sec.* D. L. Cobb, *Treas.* J. R. Jarvis, *Gen. Supt.* A. F. Garrett, *Sales Mgr.* B. R. Newbery, *Pur. Agt.* J. L. Foster, *Ch. Engr.* F. H. Townsend, Gordon, Tex.; H. C. Wells, Hollis, Okla.; J. F. Francis, Route 1, Cisco, Tex.; J. M. Phillips, Petrolia, Tex; W. A. Robinson, Box 236, Trinidad, Tex., *Supts.* Plants in Oklahoma and Texas. Capacity, 79,000.

Lone Star Gasoline Co., 1915 Wood St., Dallas, Tex.

D. A. Hulcy, *Pres.* E. F. Schmidt, R. A. Crawford, *V. P.s.* T. J. Uhl, *Sec.* D. L. Cobb, *Treas.* J. R. Jarvis, *Gen. Supt.* A. F. Garrett, *Sales Mgr.* B. R. Newbery, *Pur. Agt.* J. L. Foster, *Ch. Engr.* J. M. Kindle, Box 341, Ranger, Tex.; J. A. Bates, Box 1452, Breckenridge, Tex., *Supts.* Plants in Texas. Capacity, 111,500.

Los Nietos Producing & Refining Co., Ltd., 714 W. Olympic Blvd., Los Angeles, Calif.

C. E. Doheny, *Pres.* Olin Wellborn III, Robert S. Lytle, C. W. Smith, *V. P.s.* G. W. Johnson, Jr., *Sec.* Olin Wellborn III, *Treas.* George L. Thompson, *Gen. Supt.* W. H. Pierce, *Pur. Agt.* George L. Thompson, *Ch. Engr.*, Avenal, Calif. Harry Wolf, *Ch. Chem.* Plant in California. Capacity, 100,000.

Louisiana Iron & Supply Co., 2900 Mansfield Road, Shreveport, La.

Sam Y. Dorfman, *Pres.* Joe Gold, Mrs. Minnie Felber, *V. P.s.* Sam Sklar, *Sec.* and *Treas.* G. R. Perry, *Gen. Supt.*, Box 189, El Dorado, Ark. Plants in Arkansas. Capacity, 6,000.

Louisville Gas & Electric Co., 311 W. Chestnut, Louisville, Ky.

T. B. Wilson, *Pres.* R. Montgomery, J. J. McKenna, A. W. Lee, *V. P.s.* F. J. Pfeiffer, *Sec.* J. J. McKenna, *Treas.* J. A. Yunker, *Gen. Supt.* G. Davies, *Pur. Agt.* H. Heck, *Ch. Chem.* H. D. Robb, *Supt.*, Winchester Ky. Plant in Kentucky. Capacity, 2,400.

Mc

McBride, W. C., Inc., 2101 Missouri-Pacific Bldg., St. Louis, Mo.

B. O. Mahaffey, *Pres.* C. F. Buchner, *V. P.* E. R. Christman, *Sec.* and *Treas.* H. L. Crisman, *Gen. Supt.* B. R. Baker, *Ch. Engr.*, Avant, Okla. Plant in Oklahoma. Capacity, 1,500.

M

Magnolia Petroleum Co., Box 900, Dallas, Tex.

D. A. Little, *Pres.* L. S. Sinclair, Walace Hawkins, M. J. McLaughlin, George Miller, J. L. Latimer, J. C. Stephens, J. W. Newton, *V. P.s.* Guy L. Tate, *Sec.* W. L. Holmes, *Treas.* R. D. Hanley, *Gen. Supt.* J. C. Stephens, *Sales Mgr.* J. P. David, *Pur. Agt.* H. L. Baker, Jr., *Ch. Chem.* C. V. Edwards, Jr., *Ch. Engr.* V. L. Dickinson, Box 231, El Dorado, Ark.; C. L. Simmons, Box 797, Kermit, Tex.; J. L. Brown, Drawer M, Olden, Tex.; C. F. Koch, Box 1232, Elec-

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Mahutska Oil Co., Robinson State Bank Bldg., Robinson, Ill.

Alex U. McCandless, *Pres.* L. G. Niehoff, *V. P.* and *Treas.* John A. Byerly, *Sec.* F. B. Barnes, *Gen. Supt.* S. H. Correll, Robinson; Fred Boyd, Oblong, *Supts.* Two plants in Illinois. Capacity 1,300.

Manhattan Gasoline Co., Natl. Bank of Tulsa Bldg., Tulsa, Okla.

J. H. Boyle, *Pres.* D. E. Buchanan, *V. P.* C. E. Wharton, Gladewater, Tex.; E. H. Almond, Sinton, Tex., *Supts.* Plant in Texas. Capacity, 25,000.

Mars Co., The, 308 Seneca St., Oil City, Pa.

George E. Walker, *Pres.* A. C. Burwell, J. G. Montgomery, Jr., *V. P.s.* H. S. Rose, *Sec.* and *Treas.* C. P. Garvey, *Sales Mgr.* M. J. Connor, *Pur. Agt.* J. R. Fay, *Ch. Chem.* W. C. McDonald, North Side Star Route, Oil City, Pa.; J. J. Kane, Lewis Run, Pa.; W. E. Huggler, Van, Pa.; N. C. Gifford, Box 44, Clarion, Pa.; E. L. Betz, East Hickory, Pa., *Ch. Engrs.* Plants in Pennsylvania. Capacity, 21,300.

Melrose Oil & Gas Co., Thistle Bldg., Sistersville, W. Va.

Neal K. Wilson, *Pres.* J. P. Flynn, *V. P.* Louis N. Thomas, *Sec.* A. W. Deuel, *Treas.* A. E. Woodburn, *Gen. Supt.* Neal K. Wilson, *Sales Mgr.* A. W. Deuel, *Pur. Agt.* Claude H. Gorby, *Ch. Chem.* S. M. Tallman, *Ch. Engr.* A. E. Woodburn, *Supt.*, Middlebourne, W. Va. Plants in West Virginia. Capacity, 100.

Mid-Continent Petroleum Corp., Mid-Continent Building, Tulsa, Okla.

Jacob France, *Pres.* G. O. Moody, *V. P.* A. D. Kneale, *Asst. Sec.* Charles Klein, *Treas.* F. E. Kearney, *Gen. Supt.* C. A. Prichard, *Pur. Agt.* F. C. Bach, Bristow, Okla.; E. R. Burgess, Leonard, Okla.; R. H. Corbin, Morris, Okla.; J. A. Blackemore, Cromwell, Okla.; C. C. Wolford, Stroud, Okla.; T. G. Merritt, Stillwater, Okla., *Plant Supts.* Plants in Oklahoma. Capacity, 82,000.

Midland Gasoline Co., The, P. O. Box 271, Conroe, Tex.

Henry M. Brown, *Pres.* H. T. McGowan, *V. P.* and *Sec.* F. D. Fiegel, *Treas.* Charles W. Miller, *Supt.*, Conroe, Tex. Plant in Texas. Capacity, 20,000.

Mockley Petroleum Co., Fry, Tex.

M. E. Mockley, *Pres.* J. W. Roberts, *Gen. Supt.* Homer Lovelace, *Sales Mgr.* and *Pur. Agt.* J. W. Roberts, *Ch. Chem.* W. H. Knowles, *Ch. Engr.* J. W. Roberts, *Supt.*, Fry, Tex. Plant in Texas. Capacity, 20,000.

Mountain States Oil Corp., 604 Colorado Ave., Trinidad, Colo.

Cyrus W. Barnholt, *Pres.* H. G. Stevenson, *V. P.* M. F. Schroeder, *Sec.* Cyrus W. Barnholt, *Treas., Sales Mgr.* and *Pur. Agt.* T. J. Adkins, *Gen. Supt.* Plant in Colorado. Capacity, 6,000.

N

Neal Gasoline Co., Atlas Bldg., Tulsa, Okla.

Roy O. Neal, *Pres.* B. A. Tucker, *Sec.* H. B. Neal, *Treas.* and *Pur. Agt.* L. W. Blair, *Gen. Supt.* Roy O. Neal, *Sales Mgr.* and *Ch. Engr.* L. W. Blair, *Supt.*, Box 186, Osage, Okla. Plant in Oklahoma. Capacity, 4,840.

Nine Oaks Gasoline Corp., Box 992, Electra, Tex.

Mrs. J. H. Massie, *Pres.* Roy L. Riner, *V. P.*, Wichita Falls, Tex. E. B. Prince, *Sec.* and *Treas.* H. P. Prince, *Gen. Supt., Pur. Agt.* and *Sales Mgr.*, Gladewater, Tex. Frank M. Twibell, *Ch. Chem.* and *Ch. Engr.* Plant in Texas. Capacity, 3,000.

Norwalk Co., The, 634 South Spring St., Los Angeles, Calif.

Lionel T. Barneson, *Pres.* H. J. Barneson, J. L. Barneson, *V. P.s.* L. L. Aubert, *Gen. Mgr.* H. M. Paulsen, *Asst. Gen. Mgr.* W. E. Kropp, *Sec.* R. C. Boroff, *Pur. Agt.* L. J. Patrosso, P. O. Box O, Santa Fe Springs, Calif.; K. E. Grigsby, P. O. Box 688, Maricopa, Calif., *Supts.* Plants in California. Capacity, 4,800.

Natural Gasoline Corp., Natl. Bank of Tulsa Bldg., Tulsa, Okla.

W. K. Warren, *Pres.* F. W. Dye, *V. P.* H. E. Felt, *Sec.* J. A. LaFortune, *Treas.* S. M. Barrett, Jr., *Supt.*, P. O. Box 678, Aransas Pass, Tex. Plant in Texas. Capacity, 50,000.

O

Ohio Oil Co., The, 539 S. Main St., Findlay, Ohio.

O. D. Donnell, *Pres.* C. L. Fleming, John McFadyen, J. C. Donnell II, F. R. Clark, W. W. Fleming, G. E. McCullough, R. C. Gwilliam, *V. P.s.* E. B. Redpath, *Sec.* F. A. Bilistone, *Treas.* C. S. Sherk, *Pur. Agt.* E. B. Charlton, Shreveport, La.; I. L. Kerr, Robinson, Ill.; George Sewards, Carper, Wyo.; W. E. Smith, Eliasville, Tex., *Supts.* Plants in Louisiana, Wyoming, Illinois, and Texas. Capacity, 46,261.

Ohio Producing & Refining Co., The, 1405 E. Sixth St., Cleveland, Okla.

W. G. Hagan, *Pres.* W. G. Rogers, *V. P.* P. F. Leusch, *Sec.* and *Treas.* C. F. Turner, *Gen. Supt.* and *Ch. Chem.* A. T. Code, *Sales Mgr.* and *Pur. Agt.* J. F. Gray, *Ch. Engr.* Plant in Ohio. Capacity, 5,000.

Oil & Gas Co., The, 318½ Juliana St., Parkersburg, W. Va.

Reese Blizzard, *Pres.* A. D. Ireland, C. M. Bennett, *V. P.s.* Ross Wells, *Sec.* and *Treas.* W. O. Wells, Harrisville, W. Va., *Plant Supt.* Plant in West Virginia. Capacity, 250.

Oklahoma Gasoline Plants, Inc., Main and Dewey Sts., Sapulpa, Okla.

L. B. Jackson, *Pres.* E. E. Thompson, *V. P.* W. Maurer, *Sec.* Lewis B. Jackson, Jr., *Treas.* E. E. Thompson, *Gen. Supt., Sales Mgr., Pur. Agt.*, P. O. Box 707, Drumright, Okla. E. E. Fisher, *Ch. Engr.* Plant in Oklahoma. Capacity, 10,000.

Oklahoma Utilities Co., Bristow, Okla.

F. H. Coughlin, *Pres.* R. C. Poage, *V. P.* J. G. McClellan, *Sec.* and *Treas.* V. L. Wilson, *Pur. Agt* A. C. Wright, *Supt.*, Bristow, Okla. Plant in Oklahoma. Capacity, 5,000.

Owens, Libbey-Owens Gas Dept., P. O. Box 1375, Charleston, W. Va.

W. E. Spalding, *Gen. Mgr.* F. F. Ketchum, *Gen. Supt.* L. L. Kohlbecker, *Pur. Agt.* F. F. Ketchum, *Sales Mgr.* W. B. Strong, *Ch. Engr.* F. F. Ketchum, Box 1375, Charleston, W. Va., *Plant Supt.* Plant in West Virginia. Capacity, 10,000.

P

Pacific Western Oil Corp., 1060 Subway Terminal, Los Angeles, Calif.

W. G. Skelly, *Pres.* H. M. Macomber, Emil Kluth, *V. P.s.* D. T. Staples, *Sec.* W. G. Gibson, *Treas.* W. F. Crane, *Gen. Supt.* R. L. Engle, *Pur. Agt.* W. N. Craddock, *Ch. Engr.* J. B. Norton, Box 86, Goleta, Calif.; B. S. Anderson, Box 450, Ventura, Calif., *Supts.* Plants in California. Capacity, 45,000.

Panhandle Eastern Pipe Line Co., 101 W. Eleventh St., Kansas City, Mo.

Joe D. Creveling, *Pres.* Gerard J. Neuner, *V. P.* Leith V. Watkins, *Sec.* Louis F. Sperry, *Treas.* George T. Koch, *Gen. Supt.* S. A. Taylor, *Pur. Agt.* J. T. Russell, *Ch. Chem.*, Liberal, Kans. Plant in Kansas. Capacity, 75,000.

Parade Gasoline Co., Inc., 209 Atlas Bldg., Shreveport, La.

J. B. Atkins, *Pres.* H. L. Hunt, D. P. Hamilton, *V. P.s.* R. A. Worley, *Asst. Sec.* and *Treas.* E. L. Clover, *Gen. Supt.* and *Pur. Agt.* J. B. Atkins, *Sales Mgr.* J. B. Gershovitz, *Ch. Chem.* and *Ch. Engr.* E. L. Clover, *Supt.*, P. O. Box 548, Overton, Tex. Plant in Texas. Capacity, 125,000.

Peppers Gasoline Co., Box 88, Oklahoma City, Okla.

Charles C. Peppers, *Pres.* H. H. Champlin, *Sec.* and *Treas.* J. C. McConnico, *Supt.* Plants in Oklahoma.

Phillips Petroleum Co., Bartlesville, Okla.

Frank Phillips, *Chm. Bd.* K. S. Adams, *Pres.* Don Emery, *V. P.* and *Gen. Counsel.* G. G. Oberfell, *V. P. Research Dept.* H. E. Koopman, *V. P. Pur. Dept.* C. P. Dimit, *V. P. Prod. Dept.* M. P. Youker, *V. P. Ref. Dept.* F. E. Rice, *V. P. Nat. Gaso. Dept.* H. A. Trower, *V. P. Retirement Com.* A. M. Hughes, *V. P. Sales.* H. E. Koopman, *Pur. Agt.* G. W. McCullough, *Ch. Engr.* W. F. Matheny, *Ch. Mfg. Engr.* L. G. Wienecke, *Ch. Const. Engr.* T. K. Willett, Bartlesville, Okla.; A. W. Paris, Box 358, Phillips, Tex.; W. R. Barrett, Route 2, Pampa, Tex.; H. F. Chapman, Odessa, Tex.; L. P. Clarke, Box 1332, Breckenridge, Tex.; L. B. Wood, Esperson Bldg., Houston, Tex., *Dist. Supts.* Walter Beets, C. A. Thorn, W. A. Allen, Carl Fisher, Box 989, Oklahoma City; R. L. Ford, Box 66, Shidler; W. R. Dickens, Box 350, Edmond; W. M. Zoller, Drawer B, Snomac; J. H. Oliver, 1314 N. Alabama, Okmulgee; R. L. Stewart, Box 517, Fairfax; C. E. Thomas, Box 967, Wetumka; J. A. Johannes, Wewoka, *Okla. Supts.* A. F. Lasater, H. M. Rapp, Homer Gibson, John Rickard, J. E. Thompson, E. R. Martin, B. V. Wallis, T. L. Cubbage, E. L. Utsinger, Box 358, Phillips; L. V. Miller, W. C. Boatwright, H. F. Magerkurth, E. E. Traywick, Route 2, Pampa; J. F. Waters, Eliasville; J. F. Steed, South Bend; F. B. Joyce, Frankell; J. M. Williams, Ibex; R. C. Mason, Route 2, Bivins; G. N. Allison, Route 1, Electra; L. E. Cates, Box 507, Pioneer; J. L. Carroll, Box 66, Penwell; W. D. Kirkpatrick, Box 666, Crane; W. W. Ford, Box 66, Goldsmith; J. K. Gibson, Box 1218, Pasadena; C. C. McIntosh, Drawer 7, Sunray; C. Heironimus, Box 66, Oil Center, N. M.; A. C. Brock, Drawer PP, Hobbs, N. M., *Tex. Supts.* Plants in Oklahoma, Texas and New Mexico. Capacity, 1,459,500.

Pioneer Corp., 624 S. Cheyenne, Tulsa, Okla.

Thomas C. Smith, *Pres.* Stanley A. Brander, A. D. Blackard, *V. P.s.* Carl Fritz, *Sec.* and *Treas.* W. W. Smyers, *Supt.*

Portland Gasoline Co., 1208 Public Service Bldg., Portland, Ore.

Chester A. Sheppard, *Pres.* Franklin T. Griffith, *V. P.* Hilmar Papst, *Sec.* R. J. Hagan, *Treas.* K. W. Bunch, *Gen. Supt.* A. L. Prigmore, *Pur. Agt.* M. A. Heath, *Ch. Chem.* B. G. Harris, *Ch. Engr.* Plant in Texas. Capacity 30,000.

Powers, M. F., 624 S. Cheyenne St., Tulsa, Okla.

M. F. Powers, *Owner* and *Gen. Supt. Gaso. Plant.* E. C. Sager, *Sales Mgr.* F. George Heinze, *Pur. Agt.* J. W. Edwards, *Ch. Chem.* Lester Flanagan, Depew, Okla., *Plant Supt.* One plant in Oklahoma. Capacity, 4,000.

President Oil Co., Emlenton, Pa.

H. J. Crawford, *Pres.* T. P. Gregory, *V. P.* J. E. Taylor, *Sec.* and *Treas.* J. S. Beals, *Gen. Supt.* F. G. McCord, Emlenton, Pa.; S. Smith, Venus, Pa.; Lloyd L. Henry, Parker, Pa., *Supts.* Plants in Pennsylvania. Capacity, 600.

Preston Oil Co., The, 805 Atlas Bldg., Columbus, Ohio.

Don M. Wilson, *Pres.* D. T. Ring, Ralph N. Parks, *V. P.s.* W. M. Fallon, *Sec.* N. E. Shupe, *Treas.* Robert M. Clark, *Sales Mgr.* Roy A. Schuster, *Gen. Supt.* Lee Myers, R.F.D. 2, Summerfield, Ohio; Wilbur L. English, Box 304, Medina, Ohio; J. W. Dumbaugh, Pavonia, Ohio; W. P. Caley; Sugar Grove, Ohio; L. A. Chrisman, Homer, Ohio, *Supts.* Plants in Ohio. Capacity, 41,000.

Pure Oil Co., The, Pure Oil Bldg., Chicago, Ill.

H. M. Dawes, *Pres.* R. W. McIlvain, C. B. Watson, N. H. Weber, *V. P.s.* L. S. Wescoat, *Sec.* Raleigh Warner, *Treas.* R. H. Carr, *Gen. Supt.* R. H. McElroy, *Sales Mgr.* G. L. Parson, *Pur. Agt.* C. R. Wagner, *Ch. Chem.* Younger Neal, *Ch. Engr.* C. M. Downing, Box 1475, Drumright, Okla.; Jack Swift, Dawes, W. Va.; J. E. McCurry, Box 711, Seminole, Okla.; John Prater, Box 22J, Van, Tex., *Supts.* Plants in Oklahoma. Capacity 83,000.

R

Rancho Gasoline Corp., 1106 Subway Terminal Bldg., Los Angeles, Calif.

R. E. Bering, *Pres.* P. M. Longan, H. W. Parmelee, *V. P.s.* J. M. Longan, *Sec.* and *Treas.* Plant in California. Capacity, 15,000.

Red Brush Oil Co., 10 Walnut St., Tidioute, Pa.

C. E. Gesin, *Sec.* and *Treas.* Carl Sibble, *Ch. Engr.*, Tionesta, Pa. Plant in Pennsylvania.

Reno Oil Co., Wells Bldg., Sistersville, W. V.

J. P. Flynn, *Pres.* T. B. Gregory, *V. P.* W. R. Reitz, *Sec.* and *Treas.* J. P. Flynn, *Gen. Supt.* and *Pur. Agt.* A. C. Mercer, Ellenboro, W. Va.; John McGuirk, R.F.D., Harrisville, W. Va.; Otto Woodburn and S. G. Hissam, R.F.D., Sistersville, W. Va.; C. E. Eddy, Wade, Ohio., *Supts.* Plants in West Virginia and Ohio. Capacity, 312.

Rhodes Pool Gasoline Co., Wichita Falls, Tex.

W. V. Hamilton, *Pres.* W. H. Hammon, *V. P.* and *Treas.* James E. Allison, *Sec.*, care of Hanlon-Buchanan, Inc., Tulsa, Okla. Jo H. Cable, *Gen. Supt.* One plant in Jack County, Texas. Capacity, 5,000.

Rice Ranch Oil Co., 124 W. Fourth St., Los Angeles, Calif.

J. C. Netz, *Pres.* George W. Lichtenberger, *V. P.* I. M. Hine, *Sec.* B. J. Billington, *Gen. Supt.*, Box 31, Santa Maria, Calif. Plant in California. Capacity, 6,000.

Richfield Oil Corp., Richfield Bldg., 555 S. Flower St., Los Angeles, Calif.

Charles S. Jones, *Pres.* W. T. Dinkins, A. M. Kelley, Frank A. Morgan, *V. P.s.* Richard Gross, *Treas.* Cleve B. Bonner, *Sec.* E. B. Downey, *Asst. Treas.* and *Sec.* Leonard Switzer, *Asst. Sec.* W. T. Dinkins, *Sales Mgr.* H. H. Kelly, *Pur. Agt.* H. R. Linhoff, *Mgr. of Gas. Oper.* C. E. Sotterba, *Supt. of Gaso. Plant.* E. P. Valby, *Gas Engr. of Gaso. Dept.* M. L. Arnold, *Engr. of Gaso. Dept.* C. E. Emery, W. L. Enoch, Box 470, Long Beach, Calif.; I. M. Bumgardner, Box K, Taft, Calif.; W. A. Jamfrey, Box 569, Ventura, Calif., *Plant Foremen.* R. E. Wells, Jr., *Asst. Supt. of Gaso. Plants.* W. T. Autrey, *Comptroller.* Plants in California. Capacity, 72,000.

Roeser & Pendleton, Inc., 613 Fort Worth Club Bldg., Fort Worth, Tex.

Charles F. Roeser, *Pres.* M. R. Young, *V. P.* A. M. Brackett, *Sec.* M. R. Young, *Treas.* G. P. Crutchfield, *Gen. Supt.*, Albany, Tex.; A. M. Brackett, *Pur. Agt.* R. C. Hammock, *Ch. Chem.* P. W. Armstrong, *Ch. Engr.* R. C. Hammock, C. A. Davis, *Supts.*, Albany, Tex. Plants in Texas. Capacity, 34,000.

Rudco Oil & Gas Co., Tyler, Tex.

I. Rudman, *Pres.* Y. Scrinopskie, *V. P.* H. D. Lloyd, *Sec.* R. Rudman, *Treas.* N. W. Rudman, *Gen. Supt* A. C. Moore, Desdemona, Tex.; G. W. King, Rising Star, Tex., *Supts.* Plant in Texas. Capacity, 75,000.

S

Sabine Valley Gasoline Co., Inc., 525 First Natl. Bank Bldg., Shreveport, La.

H. R. Dickerson, *Pres.* H. H. Beeson, *V. P.* W. D Wilson, *Sec.* H. R. Dickerson, *Treas.* D. E. Farris, *Supt.*, Box 1748, Longview, Tex. Plant in Texas. Capacity, 100,000.

Say, George K., Estate, R.F.D. 2, Karns City, Pa.

Mrs. Bertha E. Say, *Treas.* One plant in Pennsylvania. Capacity, 35.

Shamrock Oil & Gas Corp., The, Amarillo Bldg., Amarillo, Tex.

John J. Sheerin, *Pres.* Robert T. Wilson, *V. P.* and *Sec.* H. C. Fownes, II, *V. P.* and *Treas.* R. B. Wolf, *Sales Mgr.* E. C. Will, Sunray, Tex., *Pur. Agt.* and *Supt.* F. B. Mack, *Ch. Engr.* H. U. Cook, Lefors, Tex., *Supt.* Plants in Texas. Capacity, 91,000.

Shell Oil Co., Inc., Shell Bldg., San Francisco, Calif.

Alexander Fraser, *Pres.* S. Belither, *Exec. V. P.* F. S. Clulow, E. F. Davis, D. Heggie, L. G. McLaren, J. U. Stair, *V. P.s.* A. R. Bradley, *Asst. Sec.* E. C. Peet, *Asst. Treas.* R. S. Tuling, Los Angeles, Calif., *Gen. Supt. Gaso. Plants.* J. C. Herron, Los Angeles, Calif., *Asst. Supt.* R. C. Kendig, Long Beach, Calif., *Ch. Chem.* E. J. Squire, Los Angeles, Calif., *Ch. Engr.* O. S. Kunkel, *Asst. Ch. Engr.* John Sanders, Long Beach, Calif.; A. W. Young, Ventura, Calif.; E. H. Channel, Compton, Calif.; T. P. Wallace, Fullerton, Calif.; William Williams, Bicknell, Calif.; J. L. Brown, Bakersfield, Calif., *Plant Supts.* A. B. Faoro, Long Beach, Calif.; G. B. Israel, Ventura, Calif., *Asst. Plant Supts.* Seven plants in California. Capacity, 187,500.

Shell Oil Co., Inc., Shell Bldg., St. Louis, Mo.

Alexander Fraser, *Pres.* F. A. C. Guepin, A. J Galloway, H. H. Anderson, P. E. Lakin, J. W Watson, E. D. Cumming, N. J. McGraw, *V. P.s.*, St. Louis. T. E. Swigart, R. B. Roark, *V. P.s.*, Tulsa. J. T. Dickerson, *Sec.* J. W. Watson, *Treas.* T. R. Goebel, Houston; R. B. Carney, Tulsa, *Gen. Supts.* P. E. Lakin, *Sales Mgr.* C. B. Singleton, *Pur. Agt.* W. Mullemeister, *Ch. Engr.* C. E. Haines, Box 32, Magnolia, Ark.; B. F. Briley, Box 788, Oxford, Kans.; John L. May, Box 1, Iowa, La.; L. Lamar, Drawer B, Wolco, Okla.; R. H. Medler, Box 398, Tonkawa, Okla.; E. A. Thoes, Box 78, Orlando, Okla.; S. U. Young, Box 548, Wilson, Okla.; C. E. Smith, Box 38, Skellytown, Tex.; C. J. Goldston, R.F.D. 2, Pampa, Tex.; S. W. Craig, Seagraves, Tex., *Supts.* Plants in Arkansas, Kansas, Louisiana, Oklahoma, and Texas. Capacity, 60,000.

Signal Oil & Gas Co., 811 W. Seventh St., Los Angeles, Calif.

S. B. Mosher, *Pres.* R. H. Green, O. W. March, *V. P.s.* H. J. March, *Sec.* J. H. Rounsavell, *Treas.* O. W. March, *Sales Mgr.* F. Lortscher, *Pur. Agt.* J. B. Taylor, *Ch. Chem.* G. L. Young, *Ch. Engr.* J. G. Hall, 2501 E. Willow St., Long Beach, Calif.; A. Kittelberger, Long Beach, Calif.; Gregg Reay, Goleta, Calif., *Supts.* Plants in California. Capacity, 120,000.

Sinclair Prairie Oil Co., Sinclair Wyoming Oil Co., Sinclair Bldg., Tulsa, Okla.

H. L. Phillips, *Pres.* W. W. Baker, *V. P.* A. E. Barrus, *Sec.* and *Treas.* C. L. Brown, *Gen Supt.* A. T. Scherer, *Sales Mgr.* H. A. Woodard, *Pur. Agt.* J. L. Gallagher, *Ch. Chem.* E. A. Wooden, *Ch. Engr.* G. R. Youker, R.F.D. 1, Drumright, Okla.; W. D. Dolan, Box 578, Shamrock, Okla.; B. C. Sharrett, Box 368, Covington, Okla.; L. M. Kelsey, Box 6, Shidler, Okla.; F. B. Pearce, Box 1070, Seminole, Okla.; L. F. Kneeland, Box 871, Seminole, Okla.; K. R. Elliott, Box 80, St. Louis, Okla.; L. C. Van Cleave, Box 4188, Capital Hill Sta., Oklahoma City, Okla.; C. J. Tighe, Box 2312, Longview, Tex.; V. H. Aker, Drawer CC, Arp, Tex.; L. N. Yates, Box 576, Taft, Tex.; Lewis Snyder, Box 105, McPherson, Kans.; S. B. White, Box 1809, Casper, Wyo., *Supts.* Plants in Oklahoma, Texas, Kansas, and Wyoming. Capacity, 468,600.

Skelly Oil Co., Skelly Bldg., Fourth and Boulder, Tulsa, Okla.

W. G. Skelly, *Pres.* C. C. Herndon, W. T. Atkins, H. M. Stalcup, A. H. Hyden, *V. P.s.* F. T. Hopp, *Sec.* and *Treas.* J. W. Vaiden, *Gen. Supt.* W. T. Atkins, *Sales Mgr.* Fred Robertson, *Pur. Agt.* F. E. Fisher, *Ch. Chem.* J. Y. Haslam, *Ch. Engr.* G. L. Cradduck, Box 178, Stinnett, Tex.; A. H. Bazell, 816 Burkburnett, Tex.; James T. Crawford, Box 128 Skellytown, Tex.; G. E. Canaday, Box 236, Cunningham, Kan.; W. J. Searle, Box 379, Eunice, N. M.; Clarence Lesher, Route 2, Fairfax, Okla.; H. E. Chambers, Box 157, Lyman, Okla.; R. O. Underwood, Box 36, Route 2, Jennings, Okla.; C. P. Duvall, Box 37, Carter Nine, Okla.; E. A. Emmons, Box 36, Phillips, Tex.; L. Barrett, Box 128, Skellytown, Tex.; Harry Muns, Box 511, Seminole, Okla.; L. J. Belanger, Box 168, Slick, Okla.; R. E. Bullick, Box 128, Skellytown, Tex.; J. T. Browning, Box 413, Wynona, Okla., *Supts.* Plants in Texas, Kansas, Oklahoma, and New Mexico. Capacity, 214,700.

Sloan & Zook Co., The, 101 Main St., Bradford, Pa.

R. T. Zook, *Pres.* William J. Sloan, Paul H. Zook *V. P.s.* T. C. Johnson, *Gen. Supt.*, Kane, Pa. Plant in Pennsylvania. Capacity, 1,500.

Smith Brothers Refinery Co., Inc., McLean, Tex.

Vester Smith, *Pres.* Ruel Smith, *V. P.* T. C. Coffey, *Sec.* H. C. Rippy, *Asst. Sec.* S. L. Humphreys, *Gen. Supt.* Ruel Smith, *Pur. Agt.* Roy Cholson, *Ch. Chem.* S. L. Humphreys, McLean, Tex.; E. A. Lovell, Kermit, Tex., *Supts.* Plants in Texas. Capacity, 100,000.

Southern Minerals Corp., 411 N. Broadway, Corpus Christi, Tex.

C. M. Brown, *Pres.* Maston Nixon, *V. P.* L. H. Heroy, *Sec.* C. W. Currier, *Treas.* Roy Corbin, *Gen. Supt* Shelton Lee, *Pur. Agt.* Frank Peterson, Jr., *Ch. Engr.* Roy Corbin, *Supt.*, Corpus Christi, Tex. Plant in Texas. Capacity, 40,000.

South Penn Natural Gas Co., Union Trust Bldg., Parkersburg, W. Va.

P. H. Curry, *Pres.* Noel Robinson, J. G. Ward, *V. P.s.* John L. Hays, *Sec.* D. E. Crawford, *Treas.* W. P. Wissner, *Pur. Agt.* H. L. Little, *Ch. Engr.*

Standard Oil Co. of California, 225 Bush St., San Francisco, Calif.

W. H. Berg, *Pres.* H. D. Collier, R. W. Hanna, R. K. Davis, M. E. Lombardi, *V. P.s.* J. H. Tuttle, *Sec.* V. F. Palmer, *Treas.* Twenty-six plants in California. Capacity, 626,000.

Standard Oil Co. of Louisiana, Standard Oil Bldg., Shreveport, La.

J. R. McWilliams, *V. P.* R. A. Howe, *Gen. Supt.* W. C. Taylor, *Pur. Agt.* O. C. Nonweiler, *Ch. Engr.* F. O. Bellizio, El Dorado, Ark.; W. H. Service, Homer, La.; C. R. McGuffin, Trees, La., *Supts.* Plants in Arkansas and Louisiana. Capacity, 27,000.

Standard Oil Co. of Texas, 225 Bush St., San Francisco, Calif.

W. H. Berg, *Pres.* R. W. Hanna, R. K. Davies, M. E. Lombardi, G. E. Kennedy, *V. P.s.* J. H. Tuttle, *Sec.* V. F. Palmer, *Treas.* One plant in Texas. Capacity, 30,000.

Stanolind Oil & Gas Co., Philcade Bldg., Tulsa, Okla.

A. W. Peake, *Chm. Bd.* F. O. Prior, *Pres.* E. F. Bullard and A. M. McCorkle, *V. P.s.* F. J. Keleher, *Sec.* and *Treas.* C. S. Sanders, *Gen. Supt.* W. L. James, *Pur. Agt.* A. C. Andrews, Bishop, Tex.; A. H. Hall, Gilliam, La.; V. N. Sibley, Midwest, Wyo., *Supts.* Plants in Texas, Louisiana, and Wyoming. Capacity, 122,500.

Stepp, Clarence W., Box 456, Yale, Okla.

Plant at Yale. Capacity, 2,700.

Success Oil Co., 503 W. Elm, Titusville, Pa.

George H. Davis, *Sec.* Aubrey Porter, Jr., Titusville, Pa., *Plant Supt.* One plant in Pennsylvania. Capacity, 1,500.

Sunflower Natural Gasoline Co., Salem, Ill.

George E. Engle, *Pres.* Maurice Pate, *V. P.*, New York. W. Van Alan Clark, *V. P.*, Suffern, New York. Robert E. Rew, *Treas.*, Nyack, N. Y. Harry Bottorf, *Asst. Treas.*, Owensboro, Ky. D. J. Rodgers, *Sec.* Maurice M. Wheeler, Morris L. La Croix, New York, *Directors.* C. C. Cherry, *Supt.* and *Chem.* Otis Hanner, *Supt. Pipe Lines.* Plant in Illinois. Capacity, 20,000.

Superior Oil Co., 930 Edison Bldg., Los Angeles, Calif.

W. M. Keck, *Pres.* W. M. Keck, Jr. H. B. Keck, *V. P.s.* W. B. Wagner, *Sec.* F. D. Jones, *Treas.* S. Magor, *Gen. Supt.* George Barry, *Pur. Agt* Jack Judy, *Supt.*, Coalinga, Calif. Plant in California. Capacity, 100,000 (plus 14,000 isobutane).

T

Texas Co. (California), The, 929 S. Broadway, Los Angeles, Calif.

C. E. Olmsted, *Pres.*, New York. T. H. Webb, *V. P.* and *Gen. Mgr.* L. R. Holmes, *V. P.* R. L. Saunders, *Sec.*, New York. L. H. Lindeman, *Treas*, New York. J. T. Wood, Jr., *Mgr.* R. L. Keyes, *Asst. Mgr. Prod. Dept.* N. H. Mull, *Supt. Gaso. Oper.* D. E. Beaton, *Mgr. Sales.* W. F. Moore, *Mgr. Pur. Dept.*, New York. Plants in California. Capacity, 220,500.

Texas Co., The, (Del.), 720 San Jacinto St., Houston, Tex.; 135 E. Forty-second St., N. Y.

W. S. S. Rodgers, *Pres.* J. S. Leach, *V. P.*, Houston, Tex. H. W. Dodge, H. T. Klein, R. Ogarrio, C. E. Olmsted, *V. P.s.*, New York. R. L. Saunders, *Sec.*, New York. L. H. Lindeman, *Treas.*, New York. L. E. Barrows, *Mgr. Prod. Dept.* E. R. Filley, *Asst. Mgr. Prod. Dept.* H. S. Cole, Jr., Fort Worth; J. A. Bermingham, Houston; R. C. Stewart, Shreveport; H. N. Pardee, Tulsa; H. A. Stewart, Denver, *Div. Mgrs. Prod. Dept.* C. C. Kelley, *Supt. Gas* and *Gasoline Plants*, Tulsa. H. W. Dodge, *Gen. Sales Mgr. Domestic*, New York. D. D. Monroe, New York, northern territory; Walter Hochuli, Chicago, central territory; C. B. Barrett, Houston, southern territory, *Sales Mgrs. Domestic.* W. H. Borie, New York, *Gen. Sales Mgr. Foreign.* W. F. Moore, New York, *Mgr. Pur. Dept.* Plants in Texas, Louisiana, Oklahoma, Kansas, and Illinois. Capacity, 105,755.

Texas Pacific Coal & Oil Co., Fort Worth National Bank Bldg., Fort Worth, Tex.

J. R. Penn, *Pres.* O. E. Mitchell, *V. P.* R. Seibel, *Sec.* and *Treas.* D. B. Hiatt, *Gen. Supt. Gaso Plants.* O. E. Mitchell, *Sales Mgr.* J. C. Davis, *Pur. Agt.* D. J. Coasta, *Ch. Engr.* C. S. Bronstad, Caddo, Tex.; H. D. White, Strawn, Tex., *Plant Supts.* Two plants in Texas. Capacity, 25,000.

Texoma Natural Gas Co., 20 N. Wacker Drive, Chicago, Ill.

W. Alton Jones, *Pres.* F. C. Brown, *V. P.* S. E. Campbell, *Sec.* F. K. Macdonald, *Asst. Treas.* G. M. Davidson, *Gen. Supt.* L. E. Biggs, *Pur. Agt.* E. G. Hammerschmidt, *Ch. Chem.* G. M. Davidson, *Ch. Engr.* R. T. Powers, *Plant Supt.*, Fritch, Tex. Plant in Texas. Capacity, 85,000.

Thomas, R. L., 290 Main St., Tidioute, Pa.

R. L. Thomas, *owner* and *operator.* Plant in Pennsylvania. Capacity, 200.

Tide Water Associated Oil Co., 17 Battery Place, New York, N. Y.

William F. Humphrey, *Pres.* C. R. Barton, L. F. Bayer, J. D. Collins, L. D. Dacius, B. I. Graves, George J. Hanks, L. D. Jurs, K. R. Hankinson, R. E. Ryerson, Edward H. Sairin, *V. P.s.* William J. Burker, *Sec.* J. P. Edwards, *Exec. Sec.* K. R. Hankinson, *Treas.* L. M. Jagon, *Gen. Supt. Gaso. Plants.* M. F. Bridges, Tulsa, Okla., *Pur. Agt.* R. W. Boyd, *Ch. Chem.* O. W. Gierow, *Ch. Engr.* Two plants in Oklahoma and Louisiana. Capacity, 19,700.

Tompsett Bros., 15 Main St., Tidioute, Pa.

W. C. Tompsett, *Pres.* Plant in Pennsylvania. Capacity, 250.

Triangle Co., Pine Hollow Road, McKees Rocks, Pa.

J. B. Montgomery, *Pres.* John H. Montgomery, *Sec.* S. H. Morgan, *Treas.* A. A. Bock, *Gen. Supt.* Plant in Pennsylvania. Capacity, 300.

Triumph Petroleum Co., Tidioute, Pa.

Ernest R. Johnson, *Mgr.* and *partner.* Plant in Pennsylvania. Capacity, 150.

Tucker Oil Co., 1210 City Natl. Bldg., Wichita Falls, Tex.

J. J. Perkins, *Pres.* Charles J. Tucker, *V. P.* and *Treas.* Harold Murph, *Sec.* and *Treas.* L. B. Horr, *Plant Supt.*, Burkburnett, Tex. Plant in Texas. Capacity, 2,500.

Tyler Oil Co., Sistersville, W. Va.

H. J. Crawford, *Pres.* J. P. Flynn, *V. P.* Nell B. McCoy, *Sec.* J. P. Flynn, *Gen. Supt.* Plants in West Virginia and Ohio. Capacity, 149.

U

Union Carbon Co., Union Bldg., Charleston, W. Va.

Oscar Nelson, *Pres.* G. A. Williams, T. F. Koblegard, T. S. Reed, *V. P.s.* C. H. McHenry, *Sec.* T. A. Whelan, *Treas.* H. E. Norrick, *Gen. Supt.* A. G. Treadgold, *Sales Mgr.* C. A. Urban, *Pur. Agt.* Plant in Louisiana. Capacity, 18,000.

Union Gasoline & Oil Corp., Kanawha Valley Bldg., Charleston, W. Va.

Don M. Wilson, *Pres.* D. T. Ring and Ralph N. Parks, *V. P.s.* William M. Falion, *Sec.* N. E. Shupe, *Treas.* Ralph N. Parks, *Sales Mgr.* J. E. Pew, *Ch. Chem.* W. H. Dardinger, Moundsville; Charles Stackpole, Porter Falls; Rex Allman, Jane Lew, *Plant Supts.* Plants in West Virginia. Capacity, 16,000.

Union Oil Co. of California, 617 W. Seventh St., Los Angeles, Calif.

Reese H. Taylor, *Pres.* W. L. Stewart, Jr., Paul M. Gregg, V. H. Kelly, A. C. Rubel, A. C. Galbraith, *V. P.s.* A. C. Stewart, *Asst. V. P.* and *Sales' Mgr.* W. R. Edwards, *Sec.* E. H. Estill and R. E. Niven, *Asst. Secys.* M. G. Kerr, *Comptroller.* A. B. Mason and I. J. Hancock, *Asst. Comptrollers.* H. W. Sand-

ers, *Treas.* A. C. Marshall, *Asst. Treas.* R. D. Gibbs, *Gen. Supt.* H. C. Farquhar, *Pur. Agt.* E. W. Gard, *Ch. Engr.* J. C. Rector, Santa Fe Springs; L. F. Scheel, Orcutt, *Plant Supts.* Plants in California. Capacity, 258,500.

United Gas Pipe Line Co., United Gas Bldg., Shreveport, La.

N. **6.** McGowen, *Pres.* R. H. Hargrove, *V. P.* and *Gen. Mgr.* M. A. Abernathy, *V. P.* L. S. Davis, *Comptroller.* R. E. Hull, *Gen. Auditor.* J. H. Miracle, *Sec.* A. L. McClellan, *Treas.* W. F. Fulton, *Gen. Supt.* F. L. Rhoades, *Asst. Supt.* W. F. Fulton, *Ch. Chem.* R. A. Reeder, *Pur. Agt.* A. D. Greene, *Ch. Engr.* O. M. Campbell, Banquete, Tex.; J. A. Temple, Cotton Valley, La.; L. O. Lawless, Bethany, La.; H. S. Ridings, Refugio, Tex.; J. L. Gilbert, Myrtis, La.; A. Meeks, Athens, La., *Plant Supts.* Plants in Texas and Louisiana. Capacity, 268,000.

Universal Consolidated Oil Co., 417 S. Hill St., Los Angeles, Calif.

E. G. Starr, *Pres.* R. E. Stearns, *V. P.* R. D. Miller, *Sec.-Treas.* Plant in California. Capacity, 5,000.

V

Vacuum Gasoline Co., Sullivan, Ind.

C. E. Kerlin, *Pres.* R. C. Kerlin, *V. P.* William H. Smith, *Sec.* C. E. Kerlin, *Treas.* R. C. Kerlin, *Gen. Supt.* and *Pur. Agt.* Homer Means, *Ch. Engr.* R. C. Kerlin, Sullivan, Ind.; Homer Means, Route 1, Bridgeport, Ill., *Supts.* Plants in Illinois. Capacity, 3,000.

Victor Gasoline Co., 624 S. Cheyenne Ave., Tulsa, Okla.

M. F. Powers, *Pres.* C. P. Quinlan, *V. P.* J. L. Goddard, *Sec.* Felix Quinlan, *Treas.* M. F. Powers, *Gen. Supt.* F. George Heinze, *Pur. Agt.* J. W. Edwards, *Ch. Chem.* L. J. Rush, Bristow, Okla.; D. B. Gilmore, Stroud, Okla.; L. E. Flanagan, Depew, Okla., *Supts.* Plants in Oklahoma. Capacity, 10,500.

Vincennes Oil & Gas Co., The, Sullivan, Ind.

C. E. Kerlin, *Pres.* R. C. Kerlin, *V. P.* William H. Smith, *Sec.* C. E. Kerlin, *Treas.* R. C. Kerlin, *Gen. Supt.* and *Pur. Agt.* Homer Means, *Ch. Engr.* Route 1, Bridgeport, Ill. Plant in Illinois. Capacity, 1,000.

Virginian Gasoline & Oil Co., Kanawha Valley Bldg., Charleston, W. Va.

Don M. Wilson, *Pres.* D. T. Ring, Ralph N. Parks, *V. P.s.* William F. Falion, *Sec.* N. E. Shupe, *Treas.* Ralph N. Parks, *Sales Mgr.* J. E. Pew, *Ch. Chem.* B. R. Samples, Elkview, W. Va.; W. L. Haynes, Clendenin, W. Va.; W. H. Evilsizer, Villa Route, Box 8, Charleston, W. Va.; C. R. Smith, Route 2, Box 240, St. Albans, W. Va. George Kiser, Hubball, W. Va.; C. H. Copenhaver, Elkview, W. Va.; George S. Robinson, Box 162, Mammoth, W. Va.; Ray Grabeel, Ona, W. Va.; H. W. Critchfield, Sandyville, W. Va.; W. F. Burdette, Three Mile, W. Va.; S. M. Pittman, Route 1, Box 127, Charleston, W. Va.; Ramie J. Grady, Box 388, Spencer, W. Va.; Owen Wheeler, Route 1, Catlettsburg, Ky.; M. H. Griffith, Kermit, W. Va., *Supts.* Plants in West Virginia and Kentucky. Capacity, 155,600.

W

Waggoner Estate, W. T., Natural Gasoline Department, Vernon, Tex.

G. M. Shanor, *Gen. Supt.* H. D. Jenkins, *Sales Mgr.* J. T. McNamara, *Pur. Agt.* B. H. Gibbons, *Supt.* Plant in Texas. Capacity, 15,000.

Wahl, A. R., 249 Main St., Evans City, Pa.

A. R. Wahl, *Pres.* and *Gen. Supt.* Plant in Pennsylvania. Capacity, 150.

Warner-Caldwell Oil Co., Second National Bank Bldg., Titusville, Pa.

Alex N. Warner, *Pres.* James H. Caldwell, *V. P.* Floyd B. August, *Sec.* and *Treas.* Alex N. Warner, *Pur. Agt.* and *Ch. Engr.* John T. Dalton, *Supt.*, Route 2, Titusville, Pa. Plant in Pennsylvania. Capacity, 1,000.

Warren Petroleum Corp., National Bank of Tulsa Bldg., Tulsa, Okla.

W. K. Warren, *Pres.* J. A. LaFortune, *V. P.* Howard E. Felt, *Sec.* A. J. Murphy, *Treas.* H. W. Harts, *Gen. Supt.* Sam I. Hulse, *Sales Mgr.* Joe R. Strain, *Pur. Agt.* L. M. Mauney, *Ch. Chem.* W. H. Kiley, *Supt. of Terminals.* W. H. Williams, Box 686, Graham, Okla.; L. D. Parker, Box 37, Harjo, Okla.; Roy Eaton, Box 243, Route 8, Oklahoma City, Okla.; Arnold Evans, Box 67, Monument, N. M.; J. W. Kearney, Box 157, Galva, Kans.; F. E. Thompson, Box 7, Fairbanks, Tex.; D. B. Young, Box 5, Fittstown, Okla.; S. M. Barrett, Jr., Box 678, Aransas Pass, Tex., *Supts.* Plants in Oklahoma, New Mexico, Kansas and Texas. Capacity, 200,000.

West Coast Refining Co., 555 Flower St., Los Angeles, Calif.

A. H. Bradford, *Pres.* M. D. Schatzman, W. M. Bradford, *V. P.s.* William B. Ogden, *Sec.* and *Treas.* B. M. Hennessey, *Supt.*, Placentia, Calif. Plant in California. Capacity, 30,000.

Western States Gasoline Corp., 609 S. Grand Ave., Los Angeles, Calif.

C. R. Gallagher, *Pres.* E. McGowan, *V. P.* and *Treas.* G. C. O'Connell, *Sec.* C. E. Spangler, *Pur. Agt.* V. F. Garman, *Ch. Chem.* W. N. Roper, *Ch. Engr.* Plants in California. Capacity, 170,000.

Westoak Gasoline Co., Union Bldg., Charleston, W. Va.

Oscar Nelson, *Pres.* A. G. Treadgold, *V. P.* C. K. Springfield, *Sec., Treas.* and *Gen. Supt.* Carl Williams, *Ch. Engr.* G. E. Adams, *Supt.*, Sayre, Okla. Plant in Oklahoma. Capacity, 15,000.

West Texas Gas Co., Lubbock, Tex.

Albert R. Jones, *Pres.*, Kansas City, Mo. R. F Hinchey, *V. P.* and *Gen. Mgr.* P. C. Spencer, 630 Fifth Ave., New York City; M. D. Snyder, P. O. Box 637, Amarillo, Tex.; E. A. Sickels, P. O. Box 521, Tulsa, Okla., *V. P.s.* George Baird, *Sec.* and *Treas.* E. C. Wagner, Amarillo, Tex., *Gen. Supt.* E. D. Parker, *Pur. Agt.* W. W. Rusk, Amarillo, Tex., *Ch. Engr.* J. S. LeGate, Box 445, Rt. 3, Amarillo, Tex., *Supt.* Plant in Texas. Capacity, 30,000.

Wilmington Gasoline Co., 711 Richfield Bldg., Los Angeles, Calif.

William C. McDuffie, *Pres.* R. Enderly, *V. P., Gen. Supt., Sales Mgr.* and *Pur. Agt.* L. P. Ecles, *V. P.* H. R. Leonard, *Sec.* Fleary Pack, *Supt.* Plant in California. Capacity, 30,000.

Wilshire Oil Co., Inc., 2455 E. Twenty-seventh St., Vernon, Calif.

George L. Machris, *Pres.* Maurice A. Machris, *V. P.* Alfred P. Machris, *Sec.* and *Treas.* L. A. Seppi, *Gen. Supt.* M. M. Fletcher, *Sales Mgr.* Fred Behrens, *Ch. Chem.* A. Pateracki, *Pur. Agt.* William F. Neeley, *Ch. Engr.* Plant in California. Capacity, 50,000.

Wright, Rosa B., 1724 Main St., Sapulpa, Okla.

Rosa B. Wright, *Pres.* J. A. Rettenmeyer, *Gen. Supt.* and *Pur. Agt.* M. L. Murphy, *Sales Mgr.* A. B. Nigh, *Ch. Engr.* Plant in Oklahoma. Capacity 5,000.

FEATURING:
COMPACTNESS
WEIGHT REDUCTION
DURABILITY

● Spicer introduces a new Five-Speed Transmission known as Model 2552-3, which arrangement is the vanguard of light weight truck units. ● This new Spicer Transmission development marks an unusual engineering achievement in producing a Five-Speed Transmission that requires less space than existing five-speed designs, in fact no more space is required than conventional four-speed designs of considerably less capacity. ● Model 2552 is direct on fifth, while Model 2553 is direct on fourth—both are Helical-Spur design for quiet operation. These units have anti-friction bearings throughout, and carry an additional anti-friction bearing for mainshaft support over competitive assemblies. Gears are made from Chrome Vanadium Steel Forgings and are carburized and tempered. Shafts are alloy steel and tempered. Incorporated in this five-speed transmission is a unique system of oiling. ● Transmission has a conventional five-speed easy shifting arrangement with equalized shift movement as standard equipment, or a forward and extended control for cab-over-engine design, or a remote control. Case is provided with two apertures so Power Take Off can be mounted on either side. ● It will pay you to get all the facts about this new Spicer five-speed Transmission. Write for details today.

Spicer Manufacturing Corporation · Toledo, Ohio

BROWN-LIPE CLUTCHES and TRANSMISSIONS
SALISBURY FRONT and REAR AXLES
SPICER UNIVERSAL JOINTS
PARISH FRAMES READING, PA.

Natural-Gasoline Plants in United States

May 1, 1940

ARKANSAS

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Arkansas Fuel Oil Co., El Dorado	Sec. 31-17s-15w, Union Co.	C-A	5,000
East Texas Ref. Co., Dallas, Tex.	Sec. 11-20-28, A. A. Capps lease, Miller County	Absp.	75,000
Gulf Refining Co., El Dorado	Sec. 8-18-15, Union County	Absp.	*5,000
Louisiana Iron & Supply Co., Shreveport, La.	El Dorado	Comp.	3,000
Louisiana Iron & Supply Co., Shreveport, La.	Louann	Comp.	3,000
Magnolia Petroleum Co., Kenova	Union Co.	Absp.	6,800
Shell Oil Co., Inc., Magnolia	Magnolia	C-A	55,000
Standard Oil Co. of La., El Dorado	El Dorado	C-A	15,000

*Shut down.

CALIFORNIA

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Bankline Oil Co., Signal Hill	American Colony Tract, Los Angeles Co.	Absp.	25,000
Barnsdall Oil Co., Goleta	Sec. 15-4n-29w, Santa Barbara County	Absp.	24,000
Belridge Oil Co., McKittrick	Sec. 26-27s-20e M.D.M.	Absp.	70,000
Belridge Oil Co., McKittrick	Sec. 26-27s-20e M.D.M.	Absp.	70,000
Belridge Oil Co., Taft	Elk Hills	Absp.	5,000
Coline Gasoline Corp., Torrance	Torrance	Absp.	30,000
Coline Gasoline Corp., Rincon	Ventura	Absp.	17,000
Cane Oil Co., Lawndale	Lawndale	Absp.	2,000
Cowan Oil & Ref. Co., Belridge	Belridge-Lost Hills field	Absp.	35,000
Cowan Oil & Ref. Co., Rosecrans	Rosecrans	Absp.	14,000
Del Rey Oil & Gas Co., Venice	Playa del Rey field	Absp.	60,000
Field, O. C., Gasoline Corp., Huntington Beach	Huntington Beach	Absp.	40,000
Field, O. C., Gasoline Corp., Huntington Beach	Huntington Beach	Absp.	35,000
Field, O. C., Gasoline Corp., Montebello	East Lincoln	Absp.	40,000
General Pet. Corp. of Calif., Brea-Olinda	Brea-Olinda	Absp.	*20,000
General Pet. Corp. of Calif., Athens-Rosecrans	Athens-Rosecrans	C-A	40,000
General Pet. Corp. of Calif., Santa Fe Springs	Santa Fe Springs	Absp.	55,000
General Pet. Corp. of Calif., Ventura	Barnard lease, Ventura	Absp.	25,000
General Pet. Corp. of Calif., Wilmington	Wilmington	Absp.	60,000
Gilmore-Dabney, Inc., Long Beach	Signal Hill	Absp.	30,000
Hokom, John, Oil & Gasoline Co., Ltd., Los Angeles	Lawndale	C-A	5,000
Honolulu Oil Corp., Taft	Buena Vista Hills, Kern Co.	C-A	60,000
Inglewood Gasoline Corp., Long Beach	Inglewood	Absp.	4,000
Italo Pet. Corp. of America, Coalinga	Sec. 6-21s-15e M.D.M. Fresno County	Absp.	300
Lomita Gasoline Co., Signal Hill	Jergins lease	Absp.	85,000
Lomita Gasoline Co., Mountain View	Mountain View	Absp.	25,000
Los Nietos Producing & Refining Co., Ltd., Avenal	Kettleman Hills	Absp.	100,000
Norwalk Co., The., Maricopa	Midway-Sunset	Absp.	10,000
Norwalk Co., The., Maricopa	Midway-Sunset	Absp.	10,000
Norwalk Co., The, Santa Fe Springs	Santa Fe Springs	Absp.	50,000
Ohio Oil Co., Los Angeles	El Segundo, Los Angeles Co.	C-A	*20,000
Pacific Western Oil Corp., Los Angeles	Elwood	Absp.	20,000
Pacific Western Oil Corp., Los Angeles	Ventura	Absp.	25,000
Rancho Gasoline Corp., Wheeler Ridge	Kern County	Absp.	*15,000
Rice Ranch Oil Co., Santa Maria	Near Orcutt, Santa Barbara County	Absp.	6,000
Richfield Oil Corp., Elk Hills	Crampton lease	Absp.	5,000
Richfield Oil Corp., El Segundo	El Segundo	Absp.	12,000
Richfield Oil Corp., Huntington Beach	Huntington Beach	Absp.	*15,000
Richfield Oil Corp., Signal Hill	Long Beach	Absp.	25,000
Richfield Oil Corp., Rincon	Rincon	Absp.	15,000
Shell Oil Co., Inc., Fullerton	Brea	Absp.	12,000
Shell Oil Co., Inc., Bicknell	Capitan	Absp.	2,500
Shell Oil Co., Inc., Compton	Dominguez	Absp.	30,000
Shell Oil Co., Inc., Long Beach	Long Beach	Absp.	75,000
Shell Oil Co., Inc., Bicknell	Santa Maria	Absp.	2,500
Shell Oil Co., Inc., Bakersfield	Ten Section	Absp.	15,000
Shell Oil Co., Inc., Ventura	Ventura	Absp.	100,000
Signal Oil & Gas Co., Elwood	Elwood	Absp.	10,000
Signal Oil & Gas Co., Long Beach	Long Beach	Absp.	*20,000
Signal Oil & Gas Co., Long Beach	Long Beach	Absp.	30,000
Signal Oil & Gas Co., Long Beach	Long Beach	Absp.	*15,000
Signal Oil & Gas Co., Long Beach	Long Beach	Absp.	15,000
Signal Oil & Gas Co., Long Beach	Long Beach	Absp.	*30,000
Standard Oil Co. of Calif., San Francisco	Cahn lease, Lost Hills	Absp.	4,000
Standard Oil Co. of Calif., San Francisco	Brea	Absp.	6,000
Standard Oil Co. of Calif., San Francisco	Murphy-Coyote	Absp.	20,000
Standard Oil Co. of Calif., San Francisco	Greeley, Section 20	Absp.	20,000
Standard Oil Co. of Calif., San Francisco	Hunt. "E" lease, Huntington Beach	Absp.	25,000
Standard Oil Co. of Calif., San Francisco	Hunt. "D" lease, Huntington Beach	Absp.	20,000
Standard Oil Co. of Calif., San Francisco	Hunt. "A" lease, Huntington Beach	Absp.	*12,000
Standard Oil Co. of Calif., San Francisco	Inglewood	Absp.	14,000
Standard Oil Co. of Calif., San Francisco	Sec. 29-V lease, Kettleman Hills	Absp.	6,500
Standard Oil Co. of Calif., San Francisco	Sec. 11-P lease, Kettleman Hills	Absp.	65,000
Standard Oil Co. of Calif., San Francisco	Sec. 3-P, Kettleman Hills	Absp.	120,000
Standard Oil Co. of Calif., San Francisco	Sec. 33-J lease, Kettleman Hills	Absp.	100,000
Standard Oil Co. of Calif., San Francisco	Long Beach	Absp.	21,000
Standard Oil Co. of Calif., San Francisco	Sec. 1-C lease, Taft	Absp.	16,000
Standard Oil Co. of Calif., San Francisco	Sec. 7-D lease, Taft	Absp.	16,000
Standard Oil Co. of Calif., San Francisco	Sec. 31-B lease, Taft	Absp.	7,000
Standard Oil Co. of Calif., San Francisco	Sec. 35-S lease	Absp.	.....
Standard Oil Co. of Calif., San Francisco	Sec. 29-G lease, Taft	Absp.	10,000
Standard Oil Co. of Calif., San Francisco	Sec. 31-E lease, Taft	Absp.	10,000
Standard Oil Co. of Calif., San Francisco	Sec. 32-Z lease, Mountain View	Absp.	10,000
Standard Oil Co. of Calif., San Francisco	Mullaney lease, 24-X Mountain View	Absp.	12,000
Standard Oil Co. of Calif., San Francisco	Santa Gertrudes, Santa Fe Springs	Absp.	30,000
Standard Oil Co. of Calif., San Francisco	San Gabriel lease Seal Beach	Absp.	27,000
Standard Oil Co. of Calif., San Francisco	Joughin lease, Torrance	Absp.	8,500
Standard Oil Co. of Calif., San Francisco	Lloyd, Ventura	Absp.	41,000
Standard Oil Co. of Calif., San Francisco	McGonigle Lloyd, Ventura	Absp.	29,000
Superior Oil Co., Los Angeles	Kettleman Hills	Absp.	100,000
Texas Co., Huntington Beach	Huntington Beach	Absp.	20,000
Texas Co., Signal Hill	Signal Hill	Absp.	75,000
Texas Co., Montebello	Montebello	Absp.	30,000
Texas Co., Santa Fe Springs	Santa Fe Springs	Absp.	50,000
Texas Co., South Mountain	South Mountain, Ventura County	Comp.	10,500
Texas Co., Shiells Canyon	Shiells Canyon, Ventura County	Absp.	35,000
Union Oil Co. of Calif., Los Angeles	Stearns lease, Brea-Olinda	Absp.	22,500
Union Oil Co. of Calif., Los Angeles	Hellman lease, Dominguez	Absp.	69,000
Union Oil Co. of Calif., Los Angeles	King lease, Kettleman Hills	Comp.	30,000
Union Oil Co. of Calif., Los Angeles	Morse lease, Richfield	Absp.	10,000
Union Oil Co. of Calif., Los Angeles	Rosecrans lease, Rosecrans	Absp.	27,000
Union Oil Co. of Calif., Los Angeles	Bell lease, Santa Fe Springs	Absp.	70,000
Union Oil Co. of Calif., Los Angeles	Newlove lease, Santa Maria	Absp.	15,000
Union Oil Co. of Calif., Los Angeles	Kernco "34" lease, Rio Bravo	Absp.	15,000
Universal Consolidated Oil Co., Los Angeles	Rosecrans	Absp.	5,000
West Coast Ref. Co., Placentia	Richfield, Orange Co.	Absp.	30,000
Western States Gasoline Corp., Avenal	Kettleman Hills, Kings Co.	Absp.	160,000
Western States Gasoline Corp., Ventura	San Miguelito, Ventura	Absp.	10,000
Wilmington Gasoline Co., Wilmington	Terminal Island	Absp.	30,000
Wilshire Oil Co., 2455 E. 27th St., Vernon	Santa Fe Springs	Absp.	50,000

*Shut down.

COLORADO

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Mountain States Oil Corp., Barela	SE Sec. 3-33s-62w	Absp.	6,000

ILLINOIS

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Arkansas Fuel Oil Co., Robinson	Sec. 3, Prairie Twp., Crawford County	Comp.	500
Brenneman & MacDonell, Lima, Ohio	1 mi. E Oblong, Crawford County	Comp.	1,200
Brenneman & MacDonnell, Lima, Ohio	6 mi. N Oblong, Crawford County	Comp.	200
Carter Oil Co., Taylor	Louden pool	Absp.	14,000
Kewanee Oil Co., Robinson	Crawford County (five plants, total)	Comp.	150
Kewanee Oil Co., Robinson	Lawrence County (two plants, total)	Comp.	150
Mahutska Oil Co., Robinson	Dist. 1 and 2, Crawford County (two plants)	Comp.	1,300
Ohio Oil Co., Oblong	Crawford County (six plants)	Comp.	2,600
Ohio Oil Co., Robinson	Crawford County	Comp.	243
Ohio Oil Co., Hardinville	Crawford County	Comp.	850
Ohio Oil Co., Stoy	Crawford County	Comp.	850
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,050
Ohio Oil Co., Casey	Clark County	Comp.	1,150
Sunflower Nat'l. Gasoline Co., Salem	Salem	Absp.	20,000
Texas Co., Salem	Salem	Absp.	20,800
Vacuum Gasoline Co., Bridgeport	5 mi. SE Bridgeport	Comp.	1,000
Vacuum Gasoline Co., Bridgeport	5 mi. NW Bridgeport	Comp.	2,000
Vincennes Oil & Gas Co., Bridgeport	5 mi. NW Bridgeport	Comp.	1,000

KANSAS

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Aldon Gasoline Co., P.O. Box F, Haven	Sec. 5-25-4, Reno County	Absp.	10,000
Barnsdall Oil Co., Oxford	W½ NW Sec. 20-33-3, Cowley County	Absp.	8,000
Cities Service Oil Co., Arkansas City	SE Sec. 13-34-3, Cowley County	Absp.	15,000
Cities Service Oil Co., Burrton	W½ Sec. 25-23-4, Reno County	Absp.	35,000
Cities Service Oil Co., Burrton	N½ SE Sec. 17-24-4, Reno County	Absp.	25,000
Cities Service Oil Co., Wichita	NW Sec. 17-28-1, Sedgwick County	Absp.	50,000
Kansas Power & Light Co., Topeka	Medicine Lodge	Absp.	10,000
Kansas Power & Light Co., Topeka	McPherson	Absp.	10,000
Northern Natural Gas Co., Hugoton	NW Sec. 19-33n-36w, Stevens County	Absp.	15,000
Panhandle Eastern Pipe Line Co., Liberal	Secs. 23 and 25-33s-32w, Seward County	Absp.	75,000
Shell Oil Co., Inc., Oxford	SE Sec. 25-31s-2e, NW Sec. 18-9s-6w	Comp.	2,500
Sinclair Prairie Oil Co., Box E, Kembro	SW Sec. 20-22-10e	Comp.	7,000
Skelly Oil Co., Cunningham	N½ NE Sec. 30-27s-10w, Kingman County	Absp.	15,000
Texas Co. (Del.), Atlanta	SW SE Sec. 31-30s-6e, Cowley County	Absp.	7,400
Warren Petroleum Corp., Galva	McPherson County	Absp.	30,000

KENTUCKY

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Louisville Gas & Electric Co., Louisville	Winchester	Char.	2,400
Virginian Gasoline & Oil Co., Catlettsburg	Boyd County	Absp.	24,000
Virginian Gasoline & Oil Co., Kermit, W. Va.	Martin County	Absp.	10,000

LOUISIANA

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Arkansas Fuel Oil Co., Haughton	Sec. 7-17n-113, Bossier Parish	Absp.	12,000
Arkansas Fuel Oil Co., Rodessa	Sec. 26-23n-16w, Caddo Parish	Absp.	25,000

ABBREVIATIONS

Absp.	Absorption	Char.	Charcoal
Comp.	Compression	V.R.	Vapor Rectification
C-A	Compression and Absorption		

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Arkansas Fuel Oil Co., Ringold	Sec. 34-18n-14w, Caddo Parish	Absp.	15,000
Arkansas Fuel Oil Co., Homer	Sec. 24-21n-8w, Claiborne Parish	Comp.	5,000
Arkansas Fuel Oil Co., Simsboro	Sec. 3-18n-4w, Lincoln Parish	Absp.	12,000
Arkansas Fuel Oil Co., Shreveport	Sec. 36-17n-10w, Webster Parish	Absp.	20,000
Coltexo Corp., Rodessa	Caddo Parish	Absp.	40,000
Continental Oil Co., Basile	NW Sec. 28-7s-2w, Acadia Parish	Absp.	20,000
Continental Oil Co., Lake Charles	SW Sec. 14-9s-8w, Calcasieu Parish	Absp.	7,000
Continental Oil Co., Villa Platte	Fontenot Lease, Evangeline Parish	Absp.	50,000
East Texas Ref. Co., Rodessa	Rodessa townsite	Absp.	8,000
Glen Rose Gasoline Co., Rodessa	Sec. B-23n-16w, Caddo Parish	Absp.	30,000
Great National Oil Corp., Shreveport	Sec. 9-23-16, Rodessa field	Absp.	15,000
Gulf Refining Co., Mooringsport	Sec. 19-21-7, Claiborne Parish	Absp.	12,000
Gulf Refining Co., Mooringsport	Sec. 19-20-5, Caddo Parish	Absp.	5,000
Ohio Oil Co., Treat	Webster Parish	Absp.	2,000
Ohio Oil Co., Haynesville	Claiborne Parish	Absp.	2,000
Ohio Oil Co., Haynesville	Claiborne Parish	Absp.	2,000
Shell Oil Co., Inc., Iowa	NW Sec. 18-9s-6w, Jefferson Davis Parish	C-A	15,000
Stanolind Oil & Gas Co., Gilliam	Pine Island field	Absp.	2,500
Standard Oil Co. of La., Trees	Caddo field, near Trees	C-A	6,000
Standard Oil Co. of La., Homer	Homer field, Claiborne Parish	Comp.	6,000
Texas Co. (Del.), Lafitte	Secs. 29 and 30-17s-24e, Jefferson Parish	Absp.	6,500
Tide Water Associated Oil Co., Tulsa	Rodessa field	Absp.	‡4,700
United Carbon Co., Inc., Monroe, La.	Sec. 33-19-5, Ouachita Parish	Absp.	18,000
United Gas Pipe Line Co., Cotton Valley	Sec. 17-21n-10w, Webster Parish	Absp.	20,000
United Gas Pipe Line Co., Rodessa	Sec. 14-21n-15w, Caddo Parish	Absp.	140,000
United Gas Pipe Line Co., Sugar Creek†	Sec. 6-19n-5w, Claiborne Parish	Absp.	30,000

†Owned jointly with Sugar Creek Syndicate, Inc., and Standard Oil Co. of Louisiana. ‡75 per cent interest.

MICHIGAN

Grimes, Otha M., Mount Pleasant	Greendale field	C-A	7,500
Grimes, Otha M., Mount Pleasant	Yost field	C-A	7,500
Grimes, Otha, M., Temple	Temple	C-A	15,000

MONTANA

Glacier Production Co., Cut Bank	Cut Bank	Absp.	15,000

NEW MEXICO

Continental Oil Co., Hobbs	SE Sec. 19-18s-38e, Lea County	Absp.	25,000
El Paso Natural Gas Co., Jal	Jal	Absp.	40,000
El Paso Nat. Gas Co.-Phillips Pet. Co., Jal	Jal	Absp.	90,000
Phillips Petroleum Co., Eunice	NE Sec. 5-21-36, Lea County	Absp.	77,000
Phillips Petroleum Co., Hobbs	N½ NW Sec. 4-19-38, Lea County	Absp.	40,000
Skelly Oil Co., Eunice	N½ SW Sec. 27-22s-37e, Lea County	Absp.	18,000
Warren Petroleum Corp., Monument	Sec. 36-19s-36e	Absp.	50,000

OHIO

Ohio Producing & Refining Co., Cleveland	Sec. 22, Chippewa Twp., Wayne County	Char.	5,000
Hope Construction & Refining Co., Pittsburgh	New Matamoras	Absp.	1,200
Pittsburgh Oil & Gas Co., Schley	Archers Fork	Comp.	150
Pittsburg Oil & Gas Co., Sycamore Valley	Sycamore Valley	Comp.	150
Preston Oil Co., Elk	Stock Twp., Noble Co.	Absp.	2,000
Preston Oil Co., York	York Twp., Medina Co.	Absp.	5,000
Preston Oil Co., Pavonia	Weller Twp., Richland Co.	Absp.	10,000
Preston Oil Co., Sugar Grove	Berne Twp., Fairfield Co.	Absp.	9,000
Preston Oil Co., Homer	Burlington Twp., Licking County	Absp.	15,000
Reno Oil Co., Sistersville, W. Va.	Monroe County	Comp.	60
Tyler Oil Co., Sistersville, W. Va.	Monroe County	Comp.	40

OKLAHOMA

Akin Gasoline Co., Tulsa	Bixby	Comp.	300
Akin Gasoline Co., Tulsa	Dewey	Comp.	300
Balco Gasoline Corp., Okemah	Dill pool	Comp.	500
Bartlett Gasoline Co., Butler	3 mi. S Butler	Absp.	15,000
Barnsdall Oil Co., Avant	SW NW SE Sec. 18-23-12, Osage County	Absp.	3,000
Barnsdall Oil Co., Turley	SE Sec. 5-20-13, Osage Co.	Absp.	1,000
Barnsdall Oil Co., Beggs	N½ NE Sec. 6-14-12, Okmulgee County	Absp.	2,000
Barnsdall Oil Co., Earlsboro	NE NE Sec. 15-9-5, Seminole County	Absp.	30,000
Carter Oil Co., Seminole	SE SE Sec. 15-9n-6e	Absp.	30,000
Carter Oil Co., Cromwell	NW NW Sec. 3-10n-8e	Absp.	18,000
Carter Oil Co., Fittstown	SW SE Sec. 30-2n-7e	Absp.	45,000
Central States Prod. Corp., Wetumka	Sec. 21-9-10, Hughes Co.	Absp.	2,800
Cities Service Oil Co., Asher	NE Sec. 22-6-3, Pottawatomie County	Absp.	7,500
Cities Service Oil Co., Wewoka	NW Sec. 19-7-8, Seminole County	Comp.	6,000
Cities Service Oil Co., Seminole	SE Sec. 24-9-6, Seminole County	Absp.	25,000
Cities Service Oil Co., Konawa	NW Sec. 9-6-6, Seminole County	Absp.	12,000
Cities Service Oil Co., Seminole	SW Sec. 14-8-6, Seminole County	Absp.	25,000
Cities Service Oil Co., Seminole	NE Sec. 11-8-5, Seminole County	Comp.	9,000
Cities Service Oil Co., Sasakwa	SE Sec. 7-6-8, Seminole County	Absp.	25,000
Cities Service Oil Co., Tallant	SE Sec. 32-25-10, Osage County	Absp.	20,000
Continental Oil Co., Billings	SW NW Sec. 21-23n-2w, Noble County	Absp.	20,000
Crosbie, J. E., Inc., Fittstown	Sec. 30-2n-7e, Pontotoc County	Absp.	50,000
Deep Rock Oil Corp., Tulsa	Sec. 9-18-5, Payne Co.	Comp.	1,000
Devonian Oil Co., Kellyville	Sec. 22-17-10, Creek Co.	Absp.	20,000
Eason Oil Co., Enid	SW Sec. 24-17n-4w, Crescent field	Absp.	
Grimes, Otha H., and Charles W., Weleetka	Weleetka	Absp.	7,500
Grimes, Otha H., and Charles W., Okemah	Okemah	Absp.	3,000
Grimes, Otha H., and Roy O. Neal, Drumright	Sec. 17-17n-7e	Absp.	5,300
Grimes, Otha H., Wetumka	Wetumka	Absp.	4,000
Gulf Oil Corp., Tulsa	Sec. 16-17-12, Kiefer, Creek County	Comp.	18,000
Gulf Oil Corp., Tulsa	Sec. 1-21-7, Osage Co.	Comp.	1,800
Gulf Oil Corp., Tulsa	Sec. 24-27-5, Osage Co.	Absp.	11,000
Gulf Oil Corp., Tulsa	Sec. 3-14-8, Bristow, Creek County	Absp.	2,400
Gulf Oil Corp., Tulsa	Sec. 14-7-6, Seminole County	Absp.	13,000
Gulf Oil Corp., Tulsa	Sec. 7-8-6, Seminole Co.	Absp.	27,000
Indian Territory Ill. Oil Co., Okla. City	Bodine, SE Sec. 24-11-3, Oklahoma County	Absp.	20,000
Indian Territory Ill. Oil Co., Okla. City	Verne, SE Sec. 13-11-3 Oklahoma County	Absp.	20,000
Indian Territory Ill. Oil Co., Okla. City	Jones, NE Sec. 31-11-2, Oklahoma County	Absp.	20,000
Indian Territory Ill. Oil Co., Okla. City	Lemmon, SE Sec. 11-11-3, Oklahoma County	Absp.	20,000
Lone Star Gas Co., Hollis	4 mi. NW Hollis	Absp.	12,000
Magnolia Petroleum Co., Davenport	Sec. 34-15n-5e, Lincoln County	Absp.	3,700
Magnolia Petroleum Co., Oilton	Sec. 7-18n-7e, Creek Co.	Absp.	9,500
Magnolia Petroleum Co., Graham	Sec. 23-2s-3w, Carter Co.	Absp.	5,000
Magnolia Petroleum Co., Wewoka	Sec. 32-8n-8e, Seminole Co.	Absp.	5,700
Magnolia Petroleum Co., St. Louis	Sec. 15-7n-4e, Pottawatomie County	Absp.	13,000
Magnolia Petroleum Co., Stonewall	Sec. 21-2n-9e, Pontotoc County	Absp.	30,000
McBride, W. C., Inc., Avant	Sec. 18-23-12, Osage Co.	Comp.	1,500
Mid-Continent Petroleum Corp., Bristow	SE SE Sec. 22-17-7	Absp.	15,000
Mid-Continent Petroleum Corp., Leonard	E½ NW Sec. 5-16-15	Comp.	2,000
Mid-Continent Petroleum Corp., Morris	SW Sec. 12-13-13	Absp.	2,000
Mid-Continent Petroleum Corp., Cromwell	NE SW Sec. 15-10-8	Absp.	50,000
Mid-Continent Petroleum Corp., Leonard	S½ SE Sec. 28-17-14	Comp.	1,000
Mid-Continent Petroleum Corp., Stroud	NW Sec. 8-15-6	Absp.	2,000
Mid-Continent Petroleum Corp., Stillwater	NE Sec. 13-18-1	Absp.	10,000
Neal Gasoline Co., Osage	Sec. 13-21-8	Absp.	4,800
Oklahoma Gasoline Plants, Inc., Sapulpa	Sec. 18-18-7e, Creek Co.	C-A	10,000
Oklahoma Utilities Co., Bristow	Sec. 20-16n-9e	Absp.	5,000
Peppers Gasoline Co., Oklahoma City	Lucien field, Noble Co.	Absp.	*15,000
Peppers Gasoline Co., Oklahoma City	Oklahoma City field	Absp.	35,000
Peppers Gasoline Co., Oklahoma City	Enid	Absp.	*5,000
Peppers Gasoline Co., Oklahoma City	Oklahoma City field	Absp.	10,000
Phillips Petroleum Co., Oklahoma City	NW SW Sec. 32-11-2w	Absp.	100,000
Phillips Petroleum Co., Denoya	NE NE Sec. 26-27-5, Osage County	Absp.	45,000
Phillips Petroleum Co., Edmond	W½ SE Sec. 31-14-3w, Oklahoma County	Absp.	40,000
Phillips Petroleum Co., Eleven-Eleven	SE NW Sec. 24-11-11, Okfuskee County	Absp.	17,000
Phillips Petroleum Co., Lima	NW NW Sec. 23-7-6, Seminole County	Absp.	20,000
Phillips Petroleum Co., Oklahoma City	S½ Sec. 1-11-3, Oklahoma County	Absp.	200,000
Phillips Petroleum Co., Reserve	SE Sec. 16-24-7, Osage County	C-A	35,000
Phillips Petroleum Co., Wewoka	SW NW Sec. 38-8-8, Seminole County	Absp.	30,000
Phillips Petroleum Co., Wetumka	N½ NW Sec. 3-9-9, Hughes County	Absp.	20,000
Pioneer Corp., Tulsa	Kiefer	Absp.	2,500
Pioneer Corp., Tulsa	Bixby	Comp.	1,500
Powers, M. F., Depew	Sec. 8-15n-8e, Creek Co.	Absp.	3,500
Pure Oil Co., Drumright	Sec. 32-18n-7e	Comp.	8,000
Pure Oil Co., Oilton	Sec. 32-19n-7e	Comp.	5,000
Pure Oil Co., Seminole	Sec. 26-9n-6e	Comp.	10,000
Shell Oil Co., Inc., Wolco	E½ Sec. 24-24n-11e	Absp.	10,000
Shell Oil Co., Inc., Orlando	SW Sec. 17-20n-2w	Absp.	50,000
Shell Oil Co., Inc., Wilson	NE Sec. 8-4s-3w	Absp.	10,000
Shell Oil Co., Inc., Tonkawa	SW Sec. 21-29n-1w	Absp.	6,000
Shell Oil Co., Inc., Tonkawa	NE Sec. 2-23n-1w	Absp.	10,000
Shell Oil Co., Inc., Wilson	SW Sec. 22-4s-2w	Absp.	10,000
Sinclair Prairie Oil Co., Drumright	SW SW Sec. 28-18-7	Absp.	25,000
Sinclair Prairie Oil Co., Shamrock	SW SE Sec. 28-17-7	Comp.	16,400
Sinclair Prairie Oil Co., Covington	W½ SW Sec. 19-22-3	Absp.	15,000
Sinclair Prairie Oil Co., Shidler	SW SE Sec. 29-27-6	Absp.	15,000
Sinclair Prairie Oil Co., Seminole	NW NW Sec. 35-9-6	Absp.	50,000
Sinclair Prairie Oil Co., Seminole	SW NE Sec. 10-8-6	Absp.	50,000
Sinclair Prairie Oil Co., St. Louis	SW Sec. 24-7-4	C-A	80,000
Sinclair Prairie Oil Co., Oklahoma City	SE NW Sec. 30-11-2	Absp.	36,000
Skelly Oil Co., Rt. 2, Fairfax No. 1	S½ NW Sec. 10-25n-6e, Osage County	Absp.	45,000
Skelly Oil Co., Rt. 2, Fairfax No. 2	N½ SW Sec. 3-25n-6e, Osage County	Absp.	21,000
Skelly Oil Co., Lyman	NW Sec. 11-27n-5e, Osage County	Comp.	7,000
Skelly Oil Co., Rt. 2, Jennings	SW NW Sec. 15-20n-6e, Pawnee County	Absp.	2,000
Skelly Oil Co., Carter Nine	NW NW Sec. 9-26n-6e, Osage County	Absp.	25,000
Skelly Oil Co., Box 511, Seminole	SW NW Sec. 17-9n-6e, Seminole County	Absp.	8,000
Skelly Oil Co., Box 168, Slick	NW Sec. 15-15n-10e, Creek County	Absp.	2,200
Skelly Oil Co., Box 413, Wynona	SW Sec. 24-24n-9e, Osage County	Absp.	2,200
Texas Co. (Del.), Houston, Tex.	NE Sec. 30-25n-8e, Osage County	Absp.	7,250
Texas Co. (Del.), Houston, Tex.	SE SE Sec. 2-14n-5e, Lincoln County	Absp.	9,000
Texas Co. (Del.), Houston, Tex.	W½ NW Sec. 8-17n-12e, Creek County	Comp.	19,500
Tide Water Associated Oil Co., Drumright	Drumright	Absp.	15,000
United Carbon Co., Inc., Charleston, W. Va.	Beckham County	Absp.	1,000
Victor Gasoline Corp., Bristow	Sec. 27-16-9e	Absp.	5,000
Victor Gasoline Corp., Stroud	Sec. 12-15-6e	Absp.	2,000
Warren Petroleum Co., Maud	Maud	Absp.	25,000
Warren Petroleum Corp., Graham	Carter County	Absp.	15,000
Westoak Gasoline Co., Box 507, Sayre	Sec. 2-19n-23w	Absp.	15,000
Wright, Rosa B., Sapulpa	Kellyville	Absp.	5,000

*Shut down.

PENNSYLVANIA

Alum Rock Gas Co., Port Allegany	Fern, Clarion County	Comp.	500
Bayliss & Fasenmeyer, Titusville	Titusville, 2 mi. S	Comp.	500
Carpenter, M. A., Karns City	Fairview Twp.	Absp.	200
Carnegie Natural Gas Co., Lone Pine	Washington Co.	Absp.	1,000
Carnegie Natural Gas Co., Waynesburg	Greene Co.	Absp.	4,500
Clinger Oil & Gas Co., Tidioute	Fagundus, Triumph Twp., Warren Co.	Comp.	1,000

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Clinger Oil & Gas Co., Tidioute	Hastings, Howe Twp., Forest Co.	Comp.	1,000
Cochran, John G., & Co., Sheffield	Lot 438, Sheffield Twp.	Absp.	1,100
Cook Oil Lease, Mayburg	Forest Co.	Comp.	150
Daugherty, C. R., Butler	Herman, Butler Co.	Comp.	25
Daugherty, C. R., & Co., Butler	Oakdale, Allegany Co.	Comp.	70
Daugherty, C. R., and M. G. Butler	Petrolia, Butler Co.	Comp.	30
Dempseytown Gas Co., Port Allegany	Clarion Co.	Comp.	265
Edwards, E. A., Titusville	Titusville	Comp.	170
Eiswerth, Hefron & Co., Lucinda	Lucinda	Comp.	*400
Eiswerth, Hefron & Co., Arthur	Lucinda	Comp.	*400
Ellenburger, W. J., & Sons, Karns City	Karns City	Comp.	300
Elliott Brothers, Chicora	Chicora	Comp.	500
Equitable Gas Co., Rogersville	Center Twp., Greene Co.	Absp.	10,000
Equitable Gas Co., Clarksville	Deemston Twp., Washington Co.	Comp.	2,000
Fleming, J. E., Grand Valley	Grand Valley	Comp.	100
Forest Chemical Co., Sheffield	Sheffield Twp.	Absp.	*300
Gould, Nancy E., & Son, Butler	Penn. Twp., Butler Co.	Comp.	3
Hickey & Rieg, Clarendon	Henry's Mill	Comp.	300
Haskell Bros., Pleasantville	Southwest Twp., Warren Co.	Comp.	100
Haskell, Roth & Bayliss, Tidioute	Triumph Twp., Warren Co.	Comp.	1,000
Hope Construction & Refining Co., Brave	Brave	Absp.	20,000
Hope Construction & Refining Co., Imperial	Imperial	Char.	3,600
Jennings, E. H., Bros. Co., Pittsburgh	Fayette Twp., Allegheny Co.	Comp.	1,000
Jennings, E. H., Bros. Co., Pittsburgh	Fayette Twp., Allegheny Co.	Comp.	150
Jennings, E. H., Bros. Co., Pittsburgh	Wetzel Co.	C-A	1,000
Jennings, E. H., Bros. Co., Pittsburgh	Wetzel Co.	C-A	100
Kapp & Brochlehurst, Tidioute	Tidioute	Vac.	100
Mars Co., The, care Hampton Station, Oil City	Pinegrove Twp., Venango Co.	Absp.	4,000
Mars Co., Lewis Run	Lewis Run	Absp.	6,500
Mars Co., Van	Van	Absp.	7,500
Mars Co., Clarion	Paint Twp., Clarion Co.	Absp.	*1,800
Mars Co., East Hickory	Hickory Twp., Forest Co.	Absp.	*1,500
Moore, Way & Harrison, Titusville	Titusville	Comp.	100
North Penn Gas Co., Port Allegany	Sharon	Absp.	*600
Pittsburgh Oil & Gas Co., Pittsburgh	Clarion	Comp.	150
Pittsburgh Oil & Gas Co., Pittsburgh	Miola	Comp.	150
Pittsburgh Oil & Gas Co., Pittsburgh	Fairview Twp., Butler Co.	Comp.	50
President Oil Co., Emlenton	Bruin, 2 mi. W	Comp.	50
President Oil Co., Emlenton	Emlenton, 2 mi. SW	Comp.	50
President Oil Co., Emlenton	Fryburg, 6 mi. N	Comp.	500
Ramage, S. Y., Oil City	Warren Co.	C-A	8,000
Red Brush Oil Co., Tidioute	Near Tionesta (two plants)	Comp.	80
Riddle Farm Oil Co., Karns City	Karns City, ¾ mi. S	Comp.	50
Ritzert Bros., Chicora	Chicora	Comp.	70
Say, George K., Estate, Karns City	Perry Twp., Armstrong Co.	Comp.	35
Sloan & Zook Co., Kane	McKean Co.	Absp.	1,500
South Penn Oil Co., Pittsburgh	Titusville	Comp.	100
South Penn Oil Co., Pittsburgh	President	Comp.	500
South Penn Oil Co., Pittsburgh	South Heights	Comp.	550
South Penn Oil Co., Pittsburgh	Bradford	Comp.	550
South Penn Oil Co., Pittsburgh	Chicora	Comp.	150
South Penn Oil Co., Pittsburgh	Chaffee	Comp.	25
South Penn Oil Co., Pittsburgh	Parker	Comp.	100
South Penn Oil Co., Pittsburgh	Freeport	Absp.	600
South Penn Oil Co., Pittsburgh	Guffey	Comp.	150
South Penn Oil Co., Pittsburgh	Washington	Comp.	100
South Penn Oil Co., Pittsburgh	Taylorstown	Comp.	100
South Penn Oil Co., Pittsburgh	Evans City	Comp.	725
South Penn Oil Co., Pittsburgh	Pleasantville	Comp.	300
South Penn Oil Co., Pittsburgh	Porcupine	Comp.	650
South Penn Oil Co., Pittsburgh	Baden	Comp.	*50
South Penn Oil Co., Pittsburgh	Sturgeon	Comp.	1,500
South Penn Oil Co., Pittsburgh	Evans City	Comp.	25
South Penn Oil Co., Pittsburgh	Tiona	Comp.	450
South Penn Oil Co., Pittsburgh	Henrys Mills	Comp.	300
South Penn Oil Co., Pittsburgh	Hooker	Comp.	100
South Penn Oil Co., Pittsburgh	Noblestown	Comp.	1,725
Success Oil Co., Titusville	Pioneer	Comp.	1,500
Surety Oil Co., Titusville	Titusville	Comp.	1,000
Tarbell & Co., Grand Valley	Grand Valley	Comp.	80
Thomas, R. L., Tidioute	Triumph Twp., Warren Co.	Vac.	200
Tompsett Bros., Tidioute	Triumph Twp., Warren Co.	Vac.	250
Triangle Co., McKees Rocks	Coraopolis	Comp.	300
Triumph Petroleum Co., Tidioute	2 mi. W Tidioute, Warren Co.	Comp.	150
Wahl, A. R., Evans City	Foward Twp.	Comp.	165
Warner-Caldwell Oil Co., Titusville	2 mi. N Titusville	Comp.	1,000

*Shut down.

TEXAS

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Agua Dulce Co., Robstown	Banquete	Absp.	45,000
Airolene Gasoline Corp., Shamrock	E. Panhandle, Magic City	Comp.	2,000
American Liberty Oil Co., Grapeland	Grapeland	Absp.	25,000
Anco Gas Corp., Palestine	Long Lake field	Absp.	19,000
Anzac Oil Corp., Coleman	M. T. Overall Lse., C.H.&H. R.R. Sur. 12, Blk. 1, Coleman Co.	Comp.	600
Arab Gasoline Corp., Eastland	Eastland-Ranger dist.	Absp.	25,000
Arkansas Fuel Oil Co., Longview	Smith Lse., Castleberry heirs, Gregg Co.	Absp.	71,600
Arkansas Fuel Oil Co., Jefferson	Bayless Lse., Hanks heirs, Marion Co.	Absp.	35,000
Arkansas Fuel Oil Co., Smithland	Marion Co.	Absp.	11,000
Arkansas Fuel Oil Co., Shreveport	Abney Lse., Harrison Co.	Absp.	12,000
B-W Gasoline Co., Livingston	Schwab field, Polk Co.	Absp.	4,000
Barnsdall Oil Co., Odessa	SW Sec. 18-42-2s, Ector Co.	Absp.	20,000
Big Lake Oil Co., Texon	Sec. 2, Blk. 2, Reagan Co.	Absp.	50,000
Buckeye Natural Gasoline Corp., Tulsa	Magic City	Absp.	15,000
Cabot Carbon Co., Wickett	S½ NE Sec. 3, Univ. Ld., Blk. 16, Ward Co.	Absp.	25,000
Cabot Carbon Co., Kermit	S½ NE Sec. 3, Public Sc. Ld., Blk. B-3, Winkler Co.	Absp.	15,000
Canadian River Gas Co., Channing	Bivin Sta., Moore Co.	Absp.	30,000
Cannon Gasoline Co., Amarillo	2 mi. N Amarillo	Comp.	5,000
Cargray Corp., White Deer	Sec. 46, Blk. 4, I.&G.N.R.R. Sur., Carson Co.	Absp.	100,000
Cities Service Oil Co., Odessa	SE SE Sec. 34, Blk. 43, T. 1n., Ector Co.	Absp.	35,000
Cities Service Oil Co., Pampa	N½ Sec. 136, Blk. 3, I&G.N. Sur., Gray Co.	Absp.	30,000
Clymore Co., Inc., Refugio	Refugio	Absp.	20,000
Coltexo Corp., Lefors	Gray Co.	Absp.	80,000
Columbian Gasoline Corp., Shamrock	Shamrock	Absp.	12,000
Consolidated Gasoline Co., Cisco	1 mi. S Eastland	Absp.	10,000
Continental Oil Co., K.M.A. plant, Electra	Wichita Co.	Comp.	50,000
Danciger Oil & Refineries, Inc., Fort Worth	Danciger	Absp.	40,000
Danciger Oil & Refineries, Inc., Fort Worth	Lefors	Absp.	20,000
Darby-Lynde Co., Electra	Near Electra	Comp.	3,000
Deep Oil Development Co., Wichita Falls	Wilson Est., A.T.N.C. Lds., Blk. 119, Archer Co.	Comp.	4,000
Deep Oil Development Co., Wichita Falls	Munger Lse., Wichita Co.	Comp.	4,000
Del Rey Petroleum Co., Hardin	Liberty Co.	Absp.	10,000
Desdemona Gasoline Co. of Texas, Desdemona	Eastland Co.	Absp.	3,000
Duval Gasoline Co., Benavides	Duval Co.	Absp.	20,000
East Texas Refining Co., Rodessa	Rodessa	Absp.	8,000
General American Oil Co., Dallas	Gladewater	Comp.	20,000
Gregg-Tex Gasoline Corp., Longview	10 mi. from Longview	Comp.	125,000
Gulf Refining Co., Monahans	Ward Co.	Absp.	25,000
Gulf Refining Co., Overton	Overton	Comp.	15,000
Hammon Exploration Co., Bay City	Hammon field	Absp.	12,000
Hanlon Gasoline Co., Tulsa	2 mi. S Breckenridge	Absp.	60,000
Hanlon Gasoline Corp. of Texas, Tulsa	4 mi. NE Gladewater	Comp.	150,000
Henderson, F. C., and E. P., Sanford	Hutchinson Co.	Absp.	26,000
Hercules Gasoline Co., Kilgore	Mary Van Winkle Sur., SE portion of 93.5-ac., Gregg Co.	C-A	85,000
Huber Corp., J. M., Borger	Sec. 28, A.&B. Sur., Hutchinson Co.	Absp.	30,000
Humble Oil & Ref. Co., Overton	4 mi. NE Overton	V.R.	11,700
Humble Oil & Ref. Co., Conroe	5½ mi. SE Conroe	C-A	12,500
Humble Oil & Ref. Co., Dickinson	2½ mi. E Dickson	A	25,000
Humble Oil & Ref. Co., Corpus Christi	Flour Bluff, 12 mi. SE Corpus Christi	A	15,000
Humble Oil & Ref. Co., Bloomington	Heyser, 3 mi. SE Bloomington	A	25,000
Humble Oil & Ref. Co., Overton	East Texas, 2½ mi. SE Kilgore	C-A	7,000
Humble Oil & Ref. Co., Neches	Boggy Creek, 4 mi. N Neches	C-A	2,000
Humble Oil & Ref. Co., Overton	East Texas, 3 mi. SE Overton	C-A	16,000
Humble Oil & Ref. Co., Bellville	Raccoon Bend, 8 mi. SW Bellville	C-A	7,000
Humble Oil & Ref. Co., Tomball, Tex.	Tomball, 2 mi. SW Tomball	C-A	35,000
Knox Refining Co., Knox	8 mi. NE Graham	Comp.	2,500
La Salle Petroleum Co., Burkburnett	Burkburnett	Comp.	*5,000
Lisbon Gasoline Co., Inc., Henderson	Cadena Sur., E. E. Moores Lse., Rusk Co.	Absp.	35,000
Lisbon Gasoline Co., Inc., Henderson	Brown Sur., W. T. Grissom Lse., Rusk Co.	Absp.	25,000
Lone Star Gas Co., Sipe Springs	8 mi. from Rising Star	Comp.	1,000
Lone Star Gas Co., Gordon	2 mi. E Gordon	Absp.	15,000
Lone Star Gas Co., Pueblo	7 mi. SE Moran	Absp.	5,000
Lone Star Gas Co., Petrolia	3 mi. S Petrolia	Absp.	15,000
Lone Star Gas Co., Trinidad	2 mi. SE Trinidad	Absp.	30,000
Lone Star Gas Co., Cheaney	9 mi. S Ranger	Comp.	1,000
Lone Star Gasoline Co., Ranger	Ranger (3)	Absp.	65,000
Lone Star Gasoline Co., Eastland	Eastland	Absp.	6,500
Lone Star Gasoline Co., Breckenridge	Breckenridge	Absp.	40,000
Magnolia Petroleum Co., Electra	Sec. 17, Blk. 13, H.&H.C. Sur., Wilbarger Co.	Comp.	4,500
Magnolia Petroleum Co., Burkburnett	Wm. Dubose Sur., Wichita Co.	Comp.	4,000
Magnolia Petroleum Co., Olden	Matt Finch Sur., Eastland Co.	Absp.	9,000
Magnolia Petroleum Co., Eastland	Smelzer Sur., Eastland Co.	Absp.	7,500
Magnolia Petroleum Co., Kings Mill	Gray Co.	Absp.	9,000
Magnolia Petroleum Co., Sunray	Moore Co.	Absp.	20,000
Magnolia Petroleum Co., Kermit	Winkler Co.	Absp.	18,000
Manhattan Gasoline Co., Sinton	Plymouth, San Patricio Co.	Absp.	25,000
Mid-Co Oil & Ref. Co., Corsicana	Cayuga field, Henderson Co.	Absp.	10,000
Midland Gasoline Co., The, Conroe	Montgomery Co.	Absp.	20,000
Mockley Petroleum Co., Fry	Brown Co.	Absp.	20,000
Natural Gasoline Corp., Aransas Pass	T. P. McCampbell subd.	Absp.	50,000
Nine Oaks Gasoline Corp., Electra	Gladewater	Comp.	3,000
Ohio Oil Co., Eliasville	Stephens Co.	Absp.	15,000
Ohio Oil Co., Eliasville	Stephens Co.	Absp.	10,000
Parade Gasoline Co., Inc., Overton	Joiner area, Rusk Co.	C-A	125,000
Phillips Petroleum Co., Bowers	W½ Sec. 62, H.&G.N. Sur., Blk. B-2, Gray Co.	Absp.	50,000
Phillips Petroleum Co., Canadian	NW SE Sec. 1, Blk. X02, Hutchinson Co.	Absp.	20,000
Phillips Petroleum Co., Carson	W C Sec. 115, I.&G.N. Sur., Blk. 5, Carson Co.	Absp.	26,000
Phillips Petroleum Co., Eliasville	6.88-ac., N½ Sur. 1174, T.E.&L. Sur., Stephens Co.	Absp.	12,000
Phillips Petroleum Co., Goldsmith	SE¼ Sec. 33, Blk. 44, Twp. 1n, T.&P. Sur., Public Sc. Lds., Ector Co.	Absp.	35,000
Phillips Petroleum Co., Gray	E½ Sec. 32, H.&G.N. Sur., Blk. 2, Gray Co.	Absp.	100,000
Phillips Petroleum Co., Frankell	5 ac., SE SW Sec. 51, T.&P. Sur., Blk. 6, Stephens Co.	Absp.	8,500
Phillips Petroleum Co., Herron City	SE 20, P. J. Humphrey Sur., 153 ac., Young Co.	Absp.	9,000
Phillips Petroleum Co., Ibex	NW¼ Sec. 28, B.A.L., Shackelford Co.	Absp.	20,000
Phillips Petroleum Co., Johnson	Cen. 60 ac., S½ Sec. 69, Blk. 46, H.&T.C. Sur., Hutchinson Co.	Absp.	50,000
Phillips Petroleum Co., Judkins	West 60 ac., N½ S½ Sec. 1, Univ. Ld., Blk. 35, Ector Co.	Absp.	40,000
Phillips Petroleum Co., Lefors	NE NE Sec. 56, Blk. 25, H.&G.N. Sur., Gray Co.	Absp.	15,000
Phillips Petroleum Co., Lodi	NE cor. Wm. R. Myers Sur., Cass Co.	Absp.	40,000
Phillips Petroleum Co., Mankins	E 60 ac. of S 120 ac., Blk. 38, Chas. A. Mangold subd. of Lazuras ranch, P. Castleman Sur., Wichita Co.	Comp.	18,000
Phillips Petroleum Co., McCamey	NE NE Sec. 216, C.C.S.D.& R.G.N.G. Sur., Blk. F, Crane Co.	Absp.	30,000
Phillips Petroleum Co., North	SW Sec. 35 & NW Sec. 36, I.&G.N. Sur., Blk. 3, Gray Co.	Absp.	60,000
Phillips Petroleum Co., Pampa	W½ SW Sec. 88, H.&G.N. Sur., Blk. B-2, Gray Co.	Absp.	60,000
Phillips Petroleum Co., Panhandle	SW¼ Sec. 113, I.&G.N.R.R. Sur., Blk. 5, Carson Co.	Absp.	15,000
Phillips Petroleum Co., Pantex	SE cor. Mary Whitley Sur., Blk. 8, Hutchinson Co.	Absp.	50,000
Phillips Petroleum Co., Pioneer	W C part W. A. Eaken 132-ac. tr., Eastland Co.	Absp.	15,000
Phillips Petroleum Co., Ray	C W½ Sec. 164, T.&N.O.R. R. Sur., Blk. 3-T, Moore Co.	Absp.	10,000
Phillips Petroleum Co., Rock Creek	N NW Sec. 22, Blk. Y, A. &B. Sur, Hutchinson Co.	Absp.	60,000
Phillips Petroleum Co., South Bend	20 ac., N C J. Garrett Sur., A-108, Young Co.	Absp.	9,000
Phillips Petroleum Co., Sanford	Sec. 81, Blk. 46, H.&T.C.R. R. Sur., Hutchinson Co.	Absp.	34,000
Phillips Petroleum Co., Texroy	SE Sec. 3, Blk. B-3, D.&S. E.R.R. Sur., Hutchinson Co.	Absp.	50,000

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Portland Gasoline Co., Pampa	SW Sec. 163, Blk. 3, L.& G.N.R.R. Sur., Gray Co.	C-A	30,000
Pure Oil Co., Van	Van Zandt Co.	C-A	45,000
Rhodes Pool Gasoline Co., Tulsa, Okla.	Jack Co.	Comp.	5,000
Roeser & Pendleton, Inc., Albany	Cook field, Shackelford Co.	Absp.	30,000
Roeser & Pendleton, Inc., Albany	Bluff Creek field, Shackelford Co.	Absp.	4,000
Rudco Oil & Gas Co., Desdemona	Desdemona	Comp.	5,000
Rudco Oil & Gas Co., Rising Star	Blake	Comp.	2,500
Sabine Valley Gasoline Co., Inc., Longview	Mary Scott Sur., Gregg Co.	V.R.	100,000
Shamrock Oil & Gas Corp., Lefors	Sec. 50, H.&G.N. Sur., Blk. 25, Gray Co.	Absp.	6,000
Shamrock Oil & Gas Corp., Sunray	Sec. 399, Blk. 44, H.&T.C. R.R. Sur., Moore Co.	Absp.	85,000
Shell Oil Co., Inc., Skellytown	SE Sec. 107, Blk. 4, I.& G.N. Sur.	Absp.	35,000
Shell Oil Co., Inc., Skellytown	NW¼ Sec. 113, Blk. 4, I.& G.N. Sur.	Absp.	8,000
Shell Oil Co., Inc., Pampa	SW Sec. 83, Blk. 3, I.&G. N. Sur.	Absp.	15,000
Shell Oil Co., Inc., Seagraves	NE Sec. 892, Blk. D, Gibson Sur.	C-A	60,000
Sinclair Prairie Oil Co., Longview	J. Moseley Sur., Boston Moore 140 ac.	C-A	80,000
Sinclair Prairie Oil Co., Arp.	Florence Wilson Lse., R. McAnulty Sur.	C-A	80,000
Sinclair Prairie Oil Co., Taft	Taft	C-A	15,000
Skelly Oil Co., Stinnett	NW Joseph W. Proctor Sur., Moore Co.	Absp.	10,000
Skelly Oil Co., Burkburnett	Burkburnett townsite, Wichita Co.	Comp.	7,000
Skelly Oil Co., Burkburnett	H.T.&B.R.R. Sur., A-124, Wichita Co.	Comp.	800
Skelly Oil Co., Skellytown	E½ SE Sec. 124, Blk. 4, I.&G.N.R.R. Co., Sur., Carson Co.	Absp.	18,000
Skelly Oil Co., Box 36, Phillips	SW Sec. 4, Blk. B-4, D.& S.E.R.R. Sur., Hutchinson Co.	Absp.	7,500
Skelly Oil Co., Skellytown	S½ Sec. 88, Blk. 3, I.&G.N. R.R. Sur., Carson Co.	Absp.	18,000
Skelly Oil Co., Skellytown	NE Sec. 13, Blk. M-21, T. C. Ry. Sur., Hutchinson Co.	Absp.	10,000
Skelly Oil Co., Skellytown	NE Sec. 174, Blk. 3, I.& G.N. Sur., Gray Co.	Absp.	20,000
Smith Bros. Ref. Co., McLean	Kermit	C-A	50,000
Smith Bros. Ref. Co., McLean	McLean	C-A	50,000
Southern Minerals Corp., Corpus Christi	Sur. 406, Saxet field	V-R	40,000
Standard Oil Co. of Texas, El Paso	Sec. 10, Blk. 34, Ward Co.	C-A	30,000
Stanolind Oil & Gas Co., Bishop	Luby field	Absp.	30,000
Texas Co. (Delaware), Olney	B.B.B.&C.R.R. Sur., Blk. A-54, Archer Co.	Comp.	3,700
Texas Co. (Delaware), Burkburnett	Jackson Haden Sur., A-90, Wichita Co.	Comp.	12,000
Texas Co. (Delaware), Electra	H.&G.N. Sur., A-654, Wichita Co.	Comp.	13,650
Texas Co. (Delaware), Johnson	S.P.R.R. Sur., Sec. 26, Blk. L, Foard Co.	Absp.	6,000
Texas Pacific Coal & Oil Co., Fort Worth	Caddo	Absp.	20,000
Texas Pacific Coal & Oil Co., Fort Worth	Strawn	Absp.	5,000
Texoma Natural Gas Co., Fritch	Sec. 5, Blk. Y-2, T.T.R.R. Sur., Hutchinson Co.	Absp.	85,000
Tucker Oil Co., Wichita Falls	Blk. 83, R.R. V. Lds. Sur., Wichita Co.	Comp.	2,500
United Gas Pipe Line Co., Latex	Jane Thorpe Sur., Panola Co.	Absp.	8,000
United Gas Pipe Line Co., Agua Dulce	Ross Peters subd. No. 2, Andres Fernandez de la Fuente gr., Nueces Co.	Absp.	45,000
United Gas Pipe Line Co., Refugio	Sec. 6, Lot 2, Refugio town tr., Refugio Co.	Absp.	25,000
Waggoner, W. T., Estate, Vernon	H.&T.C.R.R. Sur., Sec. 42, Blk. 4, Wilbarger Co.	Absp.	15,000
Warren Petroleum Co., Fairbanks	Fairbanks	Absp.	30,000
Warren Petroleum Co., Houston	Houston	Absp.	5,000
West Texas Gas Co., Lubbock	Sec. 45, Blk. 2, A.B.&M. Sur., Potter Co.	Absp.	30,000

*Shut down.

WEST VIRGINIA

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Blue Creek Oil & Gas Co., Charleston	Blue Creek	Comp.	3,500
Carbide & Carbon Chemical Corp., Diamond	Diamond	Comp.	2,500
Carbide & Carbon Chemical Corp., Hastings	Hasting	Comp.	1,000
Carnegie Natural Gas Co., Hundred	Hundred	Absp.	3,300
Carnegie Natural Gas Co., Underwood	Underwood	Absp.	3,000
Dinsmoor & Co., St. Marys (eight plants)	Pleasants County	Comp.	360
Dun Mar Oil & Gas Co., Fairview	Jarke Run	Comp.	50
Federal Oil & Gas Co., Elizabeth	Elizabeth	Comp.	250
Federal Oil & Gas Co., Weston	Weston, 8 mi. south	Comp.	500
Hapgood, Roswell T., & Co., Charleston	Cedar Grove	Char.	6,000
Henaghan & Hanlon, Inc., Sistersville	Finch	Comp.	1,000
Henaghan & Hanlon, Inc., Sistersville	Harrisville	Comp.	1,000
Henaghan & Hanlon, Inc., Sistersville	Harrisville	Comp.	5,000
Henaghan & Hanlon, Inc., Sistersville	Hebron	Comp.	3,000
Henaghan & Hanlon, Inc., Sistersville	Highland	Comp.	2,000
Henaghan & Hanlon, Inc., Sistersville	Highland	Comp.	12,000
Henaghan & Hanlon, Inc., Sistersville	Pike	Comp.	1,500
Henaghan & Hanlon, Inc., Sistersville	Pike	Comp.	3,000
Henaghan & Hanlon, Inc., Sistersville	Rock Run	Comp.	1,000
Henaghan & Hanlon, Inc., Sistersville	West Union	Comp.	500
Hope Construction & Refining Co., Pittsburgh, Pa.	Barren Creek	Absp.	12,000
Hope Construction & Refining Co., Pittsburgh, Pa.	Bristol	Absp.	8,000
Hope Construction & Refining Co., Pittsburgh, Pa.	Mount Clair	Absp.	2,500
Hope Construction & Refining Co., Pittsburgh, Pa.	Pine Grove	Absp.	40,000
Hope Construction & Refining Co., Pittsburgh, Pa.	Salem	Absp.	4,000
Hope Construction & Refining Co., Pittsburgh, Pa.	Waverly	Absp.	5,000
Hope Construction & Refining Co., Pittsburgh, Pa.	Valley Chapel	Absp.	20,000
Melrose Oil & Gas Co., Sistersville	Gorrell Farm, Middlebourne	Comp.	100
Oil & Gas Co., Parkersburg	Ritchie County	Comp.	250
Owens, Libby-Owens, Gas Dept., Charleston	South Malden	Absp.	10,000
Pittsburgh Oil & Gas Co., Pittsburgh, Pa.	R. D., Sistersville	Comp.	155
Pittsburgh Oil & Gas Co., Pittsburgh, Pa.	Macfarlan	Absp.	*1,500
Pure Oil Co., Dawes	Kanawha County	C-A	15,000
Reno Oil Co., Sistersville	Ritchie County	Comp.	33
Reno Oil Co., Sistersville	Ritchie County	Comp.	50
Reno Oil Co., Sistersville	Ritchie County	Comp.	75
Reno Oil Co., Sistersville	Tyler County	Comp.	50
Reno Oil Co., Sistersville	Tyler County	Comp.	44
South Penn Oil Co., Pittsburgh, Pa.	Mannington	Absp.	1,000
South Penn Oil Co., Pittsburgh, Pa.	Bula	Comp.	200
South Penn Oil Co., Pittsburgh, Pa.	Carpenter	Comp.	1,400
South Penn Oil Co., Pittsburgh, Pa.	Newton	Comp.	700
South Penn Oil Co., Pittsburgh, Pa.	Spencer	Comp.	900
South Penn Oil Co., Pittsburgh, Pa.	Fairview	Absp.	1,400
South Penn Oil Co., Pittsburgh, Pa.	Fink	Comp.	700
South Penn Oil Co., Pittsburgh, Pa.	Yawkey	Comp.	1,500
South Penn Oil Co., Pittsburgh, Pa.	Macfarlan	Comp.	400
South Penn Oil Co., Pittsburgh, Pa.	Wolf Summit	Comp.	600
South Penn Oil Co., Pittsburgh, Pa.	Metz	Comp.	500
South Penn Oil Co., Pittsburgh, Pa.	Smithfield	Comp.	1,000
South Penn Oil Co., Pittsburgh, Pa.	Pinch	Comp.	400
South Penn Oil Co., Pittsburgh, Pa.	Pine Grove	Absp.	1,200
South Penn Oil Co., Pittsburgh, Pa.	Rock Creek	Comp.	800
South Penn Oil Co., Pittsburgh, Pa.	Stringtown	Comp.	800
South Penn Oil Co., Pittsburgh, Pa.	Shirley	Comp.	900
South Penn Oil Co., Pittsburgh, Pa.	Tanner	Comp.	400
South Penn Oil Co., Pittsburgh, Pa.	Blue Creek	Comp.	1,400
Tyler Oil Co., Sistersville	Tyler County	Comp.	50
Tyler Oil Co., Sistersville	Tyler County	Comp.	35
Tyler Oil Co., Sistersville	Tyler County	Comp.	25
Union Gasoline & Oil Corp., Moundsville	Marshall County	Absp.	3,000
Union Gasoline & Oil Corp., Porter Falls	Wetzel County	Absp.	7,000
Union Gasoline & Oil Corp., Jane Lew	Lewis County	Absp.	3,000
Union Gasoline & Oil Corp., Sedalia	Doddridge County	Absp.	*3,000
Virginia Gasoline & Oil Co., Walgrove	Kanawha County	Absp.	*1,000
Virginia Gasoline & Oil Co., Clendenin	Kanawha County	Absp.	40,000
Virginia Gasoline & Oil Co., Charleston	Kanawha County	Absp.	15,000
Virginia Gasoline & Oil Co., St. Albans	Kanawha County	Char.	3,500
Virginia Gasoline & Oil Co., Hubball	Lincoln County	Char.	12,000
Virginia Gasoline & Oil Co., Jarrets Ford	Kanawha County	Absp.	1,800
Virginia Gasoline & Oil Co., Mammoth	Kanawha County	Absp.	2,500
Virginia Gasoline & Oil Co., Ona	Cabell County	Absp.	18,000
Virginia Gasoline & Oil Co., Sandyville	Jackson County	Char.	40,000
Virginia Gasoline & Oil Co., Three Mile	Kanawha County	Absp.	3,500
Virginia Gasoline & Oil Co., Pad	Roane County	Absp.	*800
Virginia Gasoline & Oil Co., Charleston	Kanawha County	Char.	2,000
Virginia Gasoline & Oil Co., Spencer	Roane County	Char.	*12,000
Virginia Gasoline & Oil Co., Fort Gay	Wayne County	Char.	*3,500

*Shut down.

WYOMING

Company and plant address—	Field location	Type of plant	Daily cap'y (gal.)
Continental Oil Co., Lance Creek	SE Sec. 31-36n-65w, Niobrara Co.	Absp.	20,000
Ohio Oil Co., Rocky River	Carbon Co.	Absp.	5,000
Ohio Oil Co., Kirby	Hot Springs Co.	Comp.	3,600
Sinclair Wyoming Oil Co., Bairoil	NE Sec. 10-26n-90w	Comp.	1,200
Sinclair Wyoming Oil Co., Columbine	NE NE Sec. 13-39n-79w	Absp.	5,000
Stanolind Oil & Gas Co., Midwest	Salt Creek field	Comp.	90,000

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"FLEX-SET" PREFORMED YELLOW STRAND

FIELD OPERATIONS

Summarizing the Week's Developments

ILLINOIS—Production slipped down to 422,028 bbl. in the state. Centralia was the only field that showed any increase over the previous week. One hundred and twelve new operations were started, indicating a very busy summer in the fields and outlying regions. Commencing May 1 Ohio Oil Co. started buying 80 per cent of the potential of the old Illinois fields.

WEST TEXAS—Eight locations were made in the productive area recently opened in Crockett County, despite the fact that the discovery well is now making only gas with a spray of oil. Crane County's new Ellenburger lime field opener has been officially gaged at 5,130 bbl. daily.

WEST CENTRAL TEXAS—Ten wildcat locations in six counties led the work in West Central Texas. Jones County's Gunsight lime field discovery well, Farrell's No. 1 Reid, is still testing at the rate of about 15 bbl. daily, pumping.

NORTH TEXAS—Six new deep tests staked or started throughout the northern tier of counties. The K.M.A. field's Ellenburger lime-pay extension of last week has failed due to salt water.

GULF COAST TEXAS—A pool was opened in the East Bernard area in Wharton County. The West Ranch field in Jackson County was extended.

SOUTHWEST TEXAS—Victoria County has signs of a new pool 2½ miles south of the Heyser field. Extensions to the King field in Kleberg County and the Fitzsimmons field in Duval County were made.

NEW MEXICO—Twenty-seven operations started in Lea and Eddy counties.

ARK-LA-TEX—Increased drilling activity in outposts and edge tests at Olla in La Salle Parish, an oil showing in a Caddo Parish wildcat in the Vivian sector and activity in the border counties of East Texas marked the week's developments.

KANSAS—A "pocket" in the Stoltenberg field, Ellsworth County, was proven by a producer ½ mile to the east, southeast and northwest of other producers. The South Sittner and Max pools in Stafford County were extended ½ mile southward by two outposts, and the Lost Springs pool in Marion County was extended a similar distance northward.

OKLAHOMA—Largest producer completed in Oklahoma during the week was a 1,320-bbl. well in the Cement field, Caddo County. A new producing horizon in Booch sand was uncovered in the Okfuskee County sector of the Cromwell pool. Three wildcats were started south of the Frederick field, Tillman County, all seeking Arbuckle lime production.

MICHIGAN—A dozen new oil wells ranging in initial production from 75 bbl. to 1,200 bbl. were completed last week together with eight dry holes. Twenty-nine permits to drill were issued by the state, affecting nine counties.

CALIFORNIA—Three wells aggregating 11,295 bbl. in initial production and a 2,260-bbl. well were completed in the East Coalinga field, Fresno County. Wilmington field supplied five new oil wells averaging over 400 bbl. per well; the Cole's Levee-Tupman area two wells averaging 1,500 bbl. per well, and the Ten Section field two new wells averaging 3,400 bbl. per well.

Completions in All Fields

(Week Ended May 4, 1940)

	Oil	Gas	Dry	Total	1940 total comp. to date	1939 total comp. to date
N. Y., Pa., and W. Va.	60	11	6	77	1,326	1,044
Ohio	16	11	7	34	348	306
Indiana	1	0	0	1	116	41
Kentucky	5	10	4	19	150	193
Illinois	66	0	10	76	1,165	1,107
Michigan	12	2	8	22	446	401
Kansas	17	3	2	22	505	371
Oklahoma	18	1	9	28	611	608
Texas:						
North Central Texas	53	1	19	73	1,099	777
West Texas	43	0	4	47	783	647
Texas Panhandle	6	3	0	9	198	133
East Texas	6	0	0	6	101	193
East Central Texas	1	1	2	4	86	87
East Texas Border	2	1	0	3	19	24
Gulf Coast Texas	19	3	1	23	457	463
Southwest Texas	21	0	17	38	811	828
Total Texas	151	9	43	203	3,554	3,152
North Louisiana	12	2	0	14	201	180
Gulf Coast Louisiana	16	1	4	21	313	193
Total Louisiana	28	3	4	35	514	373
Arkansas	3	0	0	3	77	83
Montana	2	0	0	2	48	46
Wyoming	0	0	0	0	52	31
Colorado	0	0	0	0	6	3
New Mexico	12	0	0	12	252	205
California	25	0	3	28	367	329
Total United States	416	50	96	562	9,537	8,293
Total previous week	378	25	131	534		
Week ended May 6, 1939	301	40	107	448		

Outstanding Fields—Highlights

(Week Ended May 4, 1940)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
K.M.A.	31	57	8	6,554	1,328	37,397
Wasson-Bennett	23	52	13	15,459	790	35,467
Ector County	22	65	10	5,031	2,093	50,739
Pecos County	2	16	2	34	1,260	28,050
Jones County	8	20	2	305	611	8,196
East Texas	6	10	6	266	26,028	396,646
OKLAHOMA						
St. Louis	1	17	0	0	879	28,750
Cement	0	15	2	1,335	305	6,300
KANSAS						
Bemis	2	5	1	23	312	7,622
Burnett	1	13	2	318	85	5,500
Silica	2	14	1	240	554	7,736
Trapp	2	13	5	4,417	517	9,071
NEW MEXICO						
Lea County	19	39	7	3,530	2,453	96,560
Eddy County	15	61	5	3,356	556	17,730
LA-ARK-TEX						
Cotton Valley, La. (deep)	0	3	0	0	159	14,825
Magnolia, Ark.	0	3	0	0	102	19,980
Golden Meadow, La.	3	16	4	613	80	16,200
MICHIGAN						
Freeman-Redding	1	6	1	145	142	13,463
Kent County	5	19	4	1,231	304	16,748
CALIFORNIA						
Montebello	0	16	1	595	360	20,750
ILLINOIS						
Salem	21	79	23	15,406	1,896	246,286
Louden	3	26	9	2,079	1,423	67,410
Other basin fields	43	295	34	6,234	2,667	99,290
Old fields	....	.....	....	.....	.....	9,042
MISSISSIPPI						
Tinsley	3	9	1	2,400	43	7,205

Illinois, Indiana and Kentucky

By STAFF CORRESPONDENT

Production Slump in Illinois; Centralia Deep Pay Extended

CENTRALIA, Ill., May 6.—Production in the state in the week ended Saturday, May 4, averaged 422,028 bbl. per day. Salem produced an average of 246,286 bbl. per day; Louden, 67,410 bbl.; Centralia, 26,970 bbl.; other basin fields, 72,320 bbl., and the old fields of the state, 9,042 bbl. The state's production dropped 14,440 bbl. a day from the previous week's total, and was 33,727 bbl. below the peak reached in the week ended March 16.

The Ohio Oil Co., large crude-oil buyer, an May 1 started taking 80 per cent of the potential production of the old pools in the eastern part of the state, which will mean some increase in the production in that area.

There were 239 Devonian lime oil wells in the Salem field at the close of this report, and 113 in the Centralia field. The drilling campaign with the Devonian as the objective will extend past the middle of the year. In the two fields, Salem and Centralia, there are about 200 rigs up and wells drilling, all of them scheduled for completion in the Devonian, and while it looks now as if the rush will be over by the close of June, there is no reason to think that the Devonian lime play in the two fields will be finished by that time. It is now generally believed that the peak of production in the state has been passed unless some unforeseen discoveries are made that will be rivals of the Centralia and Salem fields. The peak came in the week ended March 16, when production averaged 455,755 bbl. per day in the 7-day period. The following table reviews the average daily production situation in the state and in the Salem field from the week ended March 2 until the week ended May 4:

Week ended—	Production— State	Salem
March 2	404,477	246,101
March 9	414,670	260,236
March 16	455,755	291,024
March 23	446,521	286,011
March 30	424,720	255,703
April 6	427,406	250,982
April 13	421,754	251,116
April 20	433,116	258,110
April 27	436,468	260,374
May 4	422,028	246,286

The average daily production of the state in the 10 weeks was 428,692 bbl. per day.

Walter Martin and Chester Volkman extended Devonian lime production in the Salem field with what is locally characterized as a "surprise" producer. It flowed 382 bbl. in 4 hours, or at the rate of 2,292 bbl. per day. It was on a ½-in. choke the last 3 of the 4 hours. Devonian lime at 3,509-22 ft. had been acidized through casing perforations. The well is known as No. 1 Greer, 195 ft. from the south and 328 ft. from the west lines of the NE SW Section 30-2n-2e. It was drilled to the Benoist sand in the early days of the Salem field, but would not produce. Martin and Volkman recently acquired the well from Charles Shepard for the purpose of testing the Devonian horizon.

W. C. McBride, Inc., proved the existence of McClosky lime production in the Irons pool in White County, which has been yielding production from the Hardinsburg sand. McBride's No. 1 Rainey, SE NE SE Section 24-6s-8e, had McClosky pay at 3,083-89 ft. and flowed by heads a total of 74 bbl. in 48 hours. Later it made 125 bbl. in 18 hours, and still later was reported to have flowed 145 bbl. in 10 hours. It had not been acidized. A well was drilled earlier this year in the NW Section 25 to 3,100 ft., where it was abandoned as dry. This is the only known "cutoff" to the McClosky pay, the discovery of which is regarded as very important.

That the Devonian is still far from the exhaustion stage was proved in the past week when the Texas Co.'s No. 30 Wayman, 292 ft. from north and 363 ft. from the east lines of NW NE Section 31-2n-2e, flowed 8,031 bbl. in 24 hours at a total depth of 3,392 ft. This is largest 24-hour flow yet reported from the Devonian lime in Illinois. Other Salem wells have been credited with potentials as high as 13,000 bbl. based on 3 and 6-hour flows, but none of the hundreds of Devonian wells yet completed had reached the total shown by No. 30 Wayman in a full 24-hour production test. This test came in after the close of the week's regular report from the fields as did several other Texas Co. wells, including No. 22 Friesner, in Section 32-2n-2e, which flowed 730 bbl. in 14 hours; No. 23 Freisner, 180 bbl. in 3 hours, and No. 16 Stroup, in Section 30, 363 bbl. in 3 hours. Magnolia also had some late ones, No. 106 J. H. Young, in Section 21, 1,497 bbl. in 24 hours, and No. 36 W. B. Young, in Section 30, 2,252 bbl. in 24 hours.

Carter Oil Co.'s wildcat, No. 1 Prather, SE NW SW Section 28-1n-2e, in the Salem area, was drilling at 2,240 ft., which was deep enough to have penetrated the McClosky lime if it was present.

W. C. McBride, Inc., has a prospective discovery well in No. 1 Landreth, NW NW NE Section 27-5n-5e, Clay County, which cored saturation in the McClosky lime at 2,446-50 ft. Casing was set at 2,440 ft.

Completions of the past week and their initial production are given below, the initial production representing 24 hours unless otherwise stated:

Fayette County

In the Louden field in Fayette County Carter Oil Co.'s No. 4 Joe Huffman, SE NE NW Section 12-8n-3e, was shot with 60 qt. in Cypress sand at 1,463-82 ft. It pumped 42 bbl. per day. Carter's No. 1 Taylor-Doty, NW SW SE Section 12-8n-3e, shot with 20 qt. in Cypress sand at 1,515-45 ft., pumped 79 bbl. Carter's No. 2 Reed, SE NE NW Section 13-8n-3e, pumped 114 bbl. without a shot, from Cypress sand at 1,520-58 ft. Mabee Drilling Co.'s No. 4 O. Kepp, NW SE SW Section 31-8n-3e, shot with 40 and 10 qt. in Cypress sand at 1,542-65 ft., pumped 8 bbl. Carter's Oil Co.'s No. 9 S. M. Dial, NW SE NE Section 33-8n-3e, shot with 30, 40, and 10 qt. in Cypress sand, total depth 1,588 ft., pumped 564 bbl. Carter's No. 2 Dial-Durbin, SW NE NE Section 33-8n-3e, shot with 20 and 80 qt., flowed 588 bbl. Carter's No. 1 Owen, SE NW NW Section 17-7n-3e, total depth 1,584 ft., plugged back to 1,574 ft. and shot with 20 and 20 qt., pumped 282 bbl. Carter's No. 22 H. Durbin, NE SW SW Section 4-7n-3e, ripped casing at 1,512-18 ft., total depth 1,583 ft., pumped 276 bbl. without a shot. Cypress sand lay at 1,499-1,537 ft. and Paint Creek at 1,559-83 ft. Texas Co.'s No. 6 Wright, NE NW SW Section 31-6n-3e, shot with 7 qt. at 1,593-1,600 ft., Cypress sand, and pumped 126 bbl.

Clinton County

In the Bartelso pool in Clinton County Santa Fe Petroleum Co.'s No. 1-D Vanderloo, NE NW NE Section 8-1n-3w, Devonian lime at 2,440-75 ft., acidized with 1,000 and 2,000 gal., pumped 120 bbl.

In Section 2-1n-2w, Bell Oil Co.'s No. 2 Knolhoff, NE SE SW, found Devonian lime dry at 2,802-2,911 ft., total depth, and it was abandoned.

In the Centralia Field

Sixteen Devonian lime wells were completed in the Centralia field in Clinton and Marion counties.

On the Clinton County side of the field Max Pray's No. 3 Storer, NW cor. NE NE Section 13-1n-1w, had Devonian lime at 2,900 ft., total depth 2,941 ft., acidized with 2,000 gal., it flowed 415 bbl. Jones & Jones' No. 1 Bailey Huff, SW NE SE Section 13-1n-1w, casing shot at 2,906-15 ft., and acidized with 4,000 gal., flowed 350 bbl. of oil and some water. Illinois Mid-Continent Oil Co.'s No. 1-B Hefter heirs, 1,320 ft. from north and 440 ft. from west lines, NE Section 13-1n-1w, pay at 2,920 ft., total depth 2,936 ft., acidized with 1,000 gal., flowed 201 bbl. Dixie Oil Co.'s No. 1 Brookschmidt, 990 ft. from north and 40 ft. from east lines, SE Section 13-1n-1w, pay topped at 2,896 ft., total depth 2,909 ft. shot with 25 qt., flowed 216 bbl. Cokin & Manta's No. 1 Coe, 475 ft. from south and 1,225 ft. from east lines, SE Section 13-1n-1w, pay at 2,918-28 ft., flowed 279 bbl. naturally.

B. F. Gloyd's No. 1-B Miller, NE NW NE Section 24-1n-1w, a Benoist sand well at 1,365-75 ft., was good for 35 bbl. a day after a 4-qt. shot.

Scott & Carey's No. 1 Carl Ford and others, SE NE SE Section 12-1n-1w, Devonian pay at 2,915-23 ft., acidized with 750 gal., pumped 124 bbl. Sappington Oil Co.'s No. 1 Moore, Lot 10, Block 1, Second Home Terrace, Section 12-1n-1w, pay at 2,904-17 ft., acidized with 1,000 gal., flowed 238 bbl. Reynolds' No. 1 Porte, Lot 16, Block 1, Second Home Terrace, Section 12-1n-1w, pay at 2,918-37 ft., acidized with 1,000 gal., flowed 192 bbl. Schaefer & Lapex's No. 1 Home B.&L., Lot 11, Block 6, Second Home Terrace, pay at 2,900-18 ft., 1,000 gal. of acid, flowed 360 bbl. of oil and 120 bbl. of water. Thompson Drilling Co.'s No. 1 Chamber of Commerce, 165 ft. from north and 250 ft. from east lines, SE Section 12-1n-1w, pay at 2,915-20 ft., treated with 750 gal. of acid., flowed 384 bbl. Three States Oil Co.'s No. 1 Dawson, Lot 15, Block 1, Second Home Terrace, Section 12-1n-1w, acidized with 1,000 gal., flowed 213 bbl. Joe Carroll's No. 1 Hatfield, Lot 2, Block 2, Second Home Terrace, Section 12-1n-1w, pay at 2,903-15 ft., acidized with 1,000 gal., flowed 600 bbl.

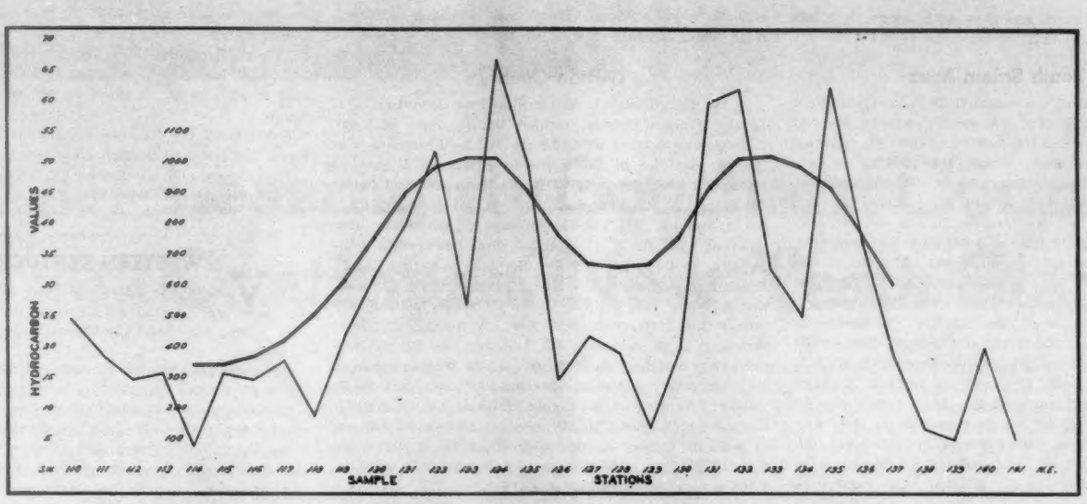
In the townsite field in Marion County Hawley Oil Co.'s No. 1 Becker, SW SW NW Section 18-1n-1e, pay at 2,902-10 ft. and 2,922-29 ft., acidized with 1,000 gal., flowed 216 bbl. Hughes Petroleum Co.'s No. 1 Deley, SW NW SE Section 7-1n-1e, pay 2,918-29 ft., acidized with 1,000 gal., flowed 470 bbl. of oil and 70 bbl. of water through ¼-in. choke. Ross Oil & Gas Co.'s No. 1 Cora Eager, Lot 6, Block 8, Second Home Terrace, Section 7-1n-1e, pay at 2,912-29½ ft., acidized with 1,000 gal., flowed 295 bbl. of oil and 29 bbl. of water. Scott & Carey's No. 1 Fox, NW cor. Section 18-1n-1e, pay at 2,914-22 ft., flowed 159 bbl. of oil and a showing of water.

Marion County

In the Salem field in Marion County 12 Devonian lime wells were completed and 11 wells in sands above the Devonian.

Kingwood Oil Co. and Bell's No. 23 Shanafelt-A, NE NE NE Section 20-2n-2e, Devonian pay at 3,420-60 ft., shot with 30 qt. at 3,430-60 ft. and acidized with 3,000 gal., flowed 519 bbl. per day.

Magnolia Petroleum Co.'s No. 98 J. H. Young, SW cor. NW NW SW Section 21-2n-2e, pay at 3,446-95 ft., acidized with 2,000 gal., flowed 572 bbl. Campilia & Lilly's No. 2 Lee Roadway, NE cor. NE NE SW Section 28-2n-2e, pay topped at 3,432 ft., total depth 3,470 ft., 5,000 gal. of acid, flowed 1,659 bbl. Texas Co.'s No. 8 H. Corbin, SE SE NE Section 31-2n-2e, pay at 3,294-3,340 ft., 3,000 gal. of acid, flowed 370 bbl. in 3 hours, rated at 2,590 bbl. per day. Texas' No. 5 L. Maxwell A, NE SE NE Section 31-2n-2e, pay at 3,289 ft., total depth 3,340 ft., 3,000 gal. of acid, flowed 2,800 bbl. Texas' No. 25 Wayman, SW NW NE Section 31-2n-2e, pay at 3,327-65 ft., 3,000 gal. of acid, flowed 1,800 bbl. Texas' No. 29 Wayman, SE NE NE Section 31-2n-2e, pay at 3,294-3,350 ft., 3,000 gal. of acid, flowed 1,440 bbl. Texas' No. 17 Williams, SW NE SE Section 31-2n-2e, pay at 3,392-3,330 ft., 3,000 gal. of acid, flowed 2,100 bbl. Texas' No. 10 Hayes, SE NW NW Section 32-2n-2e, pay at 3,300-46 ft., flowed 200 bbl. naturally in 7 hours; acidized with 3,000 gal., flowed 700 bbl. in 24 hours. Texas' No. 28 K. Wayman, SW NW NW Section 32-2n-2e, pay at 3,298-3,343 ft., 3,000 gal. of acid, flowed 1,200 bbl. Wiser Oil Co.'s No. 12 Weems, NW NW NW Section 33-



Hydrocarbon profile over newly discovered pool in Oklahoma.

7 REASONS WHY SOIL ANALYSIS SURVEYS WILL REDUCE YOUR EXPLORATION COSTS

1. Soil Analysis is the only exploration tool thus far developed on a commercial scale which obtains its findings from the petroleum deposit itself—not structure alone. By employing geology or geophysics to locate favorable structures, and geochemistry to determine if commercial deposits of petroleum exist within such structures—a far more reliable conclusion is reached than has heretofore been possible.

2. Conclusions from G. S. S. C. commercial soil analyses on wildcat locations properly surveyed have proved approximately 70% accurate to date.

3. Value of the method is strongly attested by the wide acceptance already accorded it. It is fast becoming a standard part of the exploration programs of the leading oil companies.

4. Cost of Soil Analysis is remarkably low—often no more than 1 to 5 per cent of wildcat drilling cost —thus serving as a low-cost insurance against dry holes.

5. The method is universal in application, as the accuracy of its findings is not affected by depth of the deposit, and the field work can be economically performed over any terrain.

6. G. S. S. C. was the pioneer in this field. Its founder, Robert O. Smith, pioneered the experimental phase, and made the first commercial surveys, many years ago.

7. Having been the pioneer of chemical prospecting, and the first to enter the commercial field, the long experience of this company in making actual surveys and having them checked by the drill, affords them a vast amount of empirical working knowledge which can be assembled in no other way.

GEOLOGICAL SCIENTIFIC SERVICE COMPANY, INC.

Sinclair Bldg., Fort Worth, Texas

The PIONEER in Chemical Prospecting

2n-2e, Aux Vases sand, and shot with 20 qt. at 1,792-1,839 ft., pumped 75 bbl.

In South Salem Area

In the south end of the Salem field Texas Co.'s No. 6 City of Centralia, SE NW SW Section 4-1n-2e, Benoist sand at 1,809-46 ft. and Renault at 1,846-55 ft., pumped 182 bbl. without a shot. Texas' No. 10 City of Centralia, SW NW SW Section 4-1n-2e, Benoist sand at 1,817-44 ft., Renault at 1,844-46 ft., pumped 96 bbl. Texas Co.'s No. 10-C Richardson B, SW SE SE Section 5-1n-2e, McClosky lime at 2,001-60 ft., at intervals, acidized with 2,000 gal., pumped 462 bbl. Texas' No. 12-C, Richardson B, SE NE SE Section 5-1n-2e, Benoist sand at 1,466-1,806 ft., Renault at 2,806-40 ft., pumped 126 bbl. Texas' No. 18 E. Tate, NE SW NW Section 5-1n-2e, McClosky at 1,908-71 ft., at intervals, flowed 260 bbl. in 6 hours. Texas' No. 16 W. Friederich B, NW NE NE Section 8-1n-2e, McClosky at 2,024-45 ft., acidized with 2,000 gal., pumped 224 bbl. Texas' No. 17 W. Friederich B, SE SE NE Section 8-1n-2e, McClosky at 2,048-80 ft., acidized with 2,000 gal., pumped 147 bbl. Texas Co.'s No. 9 W. D. Fyke, NE NE SE Section 8-1n-2e, McClosky at 2,090-95 ft., acidized with 2,000 gal., pumped 98 bbl. Texas' No. 16 Bryant, NW NW SW Section 9-1n-2e, McClosky at 2,040-44 ft., and 2,080-91 ft., acidized with 2,000 gal., pumped 126 bbl. J. J. Deaner, in NE cor. NW NE Section 18-1n-1e, McClosky at 2,054-81 ft., flowed 650 bbl. in 24 hours, naturally; acidized with 3,000 gal., it flowed 452 bbl. in 24 hours.

In Monroe County Dorsey Oil Co. abandoned No. 1 Rose, NW cor. SW Section 15-1s-10w, at 860 ft., a dry hole.

In Lawrence County W. C. McBride, Inc.'s No. 1 Crews, C SW SE Section 18-4n-10w, was junked and abandoned at 1,440 ft.

In Wabash County Bander and others' No. 1 Seibert,

(Continued on Page 138)

INDIANA

EVANSVILLE, Ind., May 6.—One 75-bbl. well was completed in Posey County. A well good for from 320 bbl. upwards in Gibson County, and a smaller near completion in Posey County were also reported. No reports were obtained from the northern wildcats. High water is again slowing up work in the state.

Gibson County

J. W. Chamberlain's No. 1 Shawhan, Donation 121-1s-10w, Gibson County, topped Brown lime at 1,491 ft. and was drilling at 1,528 ft. W. J. Whitcomb was fishing for liner in No. 1 Meade, SE cor. SW Section 12-1s-10w, total depth 1,462 ft. It is an old well being deepened. K. T. and S. F. Oil & Development Co.'s No. 1 Shoultz, NE NE SE Section 18-1s-9w, was shut down at 1,262 ft. W. C. McBride, Inc., has started drilling No. 1 Blair, SE SE NW Section 13-2s-12w; A. L. Braden and others' No. 1 Knight, NE cor. SW SW Section 2-2s-11w, was drilling at 615 ft. L. B. Jackson and others' No. 1 Barthold, NW NW SW Section 23-2s-9w, spudded. L. B. Jackson's No. 1 Bauer, SW SE SE Section 10-2s-9w, had derrick up. A. J. Walker's No. 1 Schmidt, NW cor. NE NW Section 24-3s-9w, total depth 1,050 ft., running 6⅝-in. casing. Papoose Oil Co.'s No. 3 Cooper C, SE cor. NW SW Section 18-3s-13w, drilling at 2,634 ft.; Cherry & Kidd and others' No. 1 Dunn, SE SW NE Section 17-3s-13w, topped Paint Creek sand at 2,588 ft. and was drilling at 2,618 ft.

Papoose Oil Co.'s No. 5 Cooper-A, SW NW SW Section 13-3s-14w, was shot with 20 qt. at 2,484-2,509 ft., and flowed 292 bbl. in 14 hours. In the last 5 hours it made 15 bbl. per hour. Preparations were being made to put it on the pump.

Warrick County

In Warrick County Wintner and others' No. 1 Brockman, SW NW NW Section 13-5s-9w, was shut down at 300 ft. S. R. Travis and others' No. 1 Moyer, NW SW NW Section 13-5s-9w, underreaming 6-in. casing, total depth 1,803 ft. L. B. Jackson and others' No. 1 Schumaker, NE NW SW Section 34-3s-8w, was being rigged up. This is supposed to be a Devonian lime test.

Posey County

High water from the Wabash River was affecting Posey County operations and numerous wells were shut down. Obermyer and others' No. 1 Kleiderer, SE cor. Section 28-3s-14w, pumped 90 bbl. of oil in 11 hours from sand at 2,775-95 ft., but could not be completed because of the flood.

Roberts Brothers' No. 5 Keck, C W½ E½ NW Section 34-3s-14w, had Aux Vases sand at 2,786 to 2,806 ft., and shot it with 20 qt. It made 75 bbl. in 24 hours on the pump.

Continental Oil Co. was drilling at 400 ft. in No. 1 Ford, NE NE NW Section 35-3s-14w.

Paul Rossie and others had rig up for No. 1 Pendell, SW SE SE Section 30-6s-12w.

(Continued on Page 124)

WESTERN KENTUCKY

OWENSBORO, Ky., May 6.—Four oil wells and four dry holes were completed in western Kentucky in the past week. Six new operations were started in the district.

Breckinridge County, Van Zant district: B. Calvert's No. 2 Harl heirs was drilling at 250 ft.

Butler County, Huntsville district: P. Evans and others' No. 1 Garner heirs, spudding.

Daviess County, Utica district: J. C. Miller, trustee, and others' No. 3 J. B. Baird, moving in. H. C. Farmer and others' No. 5 G. A. Nation, 50-bbl. well in Barlow sand at 1,385-91 ft. Stewart, Snyder and others' No. 6 Dr. A. A. Westerfield, dry hole through McClosky lime, total depth 1,731 ft. Handyville district: A. V. Smith and others' No. 2 R. Y. Cravens, dry and abandoned at 1,849 ft. Thurston district: Jim McCummings' No. 19 W. Thompson, spudding in.

(Continued on Page 117)

OHIO FIELDS

FINDLAY, Ohio, Apr. 29.—Ohio operators reported 13 completions last week in the fields covered by this report, 8 gas wells, 1 oil well, and 3 dry holes. Two fair gassers were reported in the Newark field.

In Athens County two small gas wells were completed in the second Berea, Ames Township. Orndoff Co.'s No. 3 William C. Mingus, Fraction 35, gaged 70,000 cu. ft., open flow, depth 1,390 ft. In Lodi Township A. D. Townsent's No. 2 A. W. Brown, Fraction 5, gaged 50,000 cu. ft. of gas, open flow, depth 1,681 ft.

(Continued on Page 129)

POWER is *RIGHT*—When It's G-P-I

Two General Power Units, driving Dayton-Dowd, centrifugal pumps in an Eason Oil Co. natural gasoline plant.

These two General Power Units were in constant operation, 24 hours a day for two years, before advantage was taken of the first engine exchange . . . such economy and performance is typical of General Power Ford V-8 Conversion units.

G-P-I Units are available with single, dual, or multiple Ford V-8, 60 h.p., 85 h.p., 95 h.p., and Lincoln-Zephyr engines, for pumping, generating, or drilling installations.

Nation-wide engine and engine parts exchange plan, combined with low initial cost of units, assures low cost maintenance.

Write for Catalog

GENERAL POWER, INC. Quapaw, Okla.

Oklahoma Operations

By
DAL DALRYMPLE

Leasing in Southern Counties Continues, New Tests Started

Sinclair Prairie Oil Co. has become the largest leaseholder in the Cumberland district of Marshall and Bryan counties, in Oklahoma. The company has approximately 15,000 acres between Bokchito and Bennington and since Pure Oil Co.'s No. 1 Little opened a new pool, has secured leases southeast from the Little well to south of Durant.

It was estimated that some 250,000 acres have been leased in the play which started 2 months ago. Average high price has been from $5 to $75 an acre, with considerable land leased earlier at $1 an acre. In the area extending from the Pure's discovery well to Durant and Roberta, prices were reported as high as $30 an acre. This trend was leased almost solidly without any company getting a block.

Anderson-Prichard and Magnolia Petroleum Co. were among the larger buyers. Other companies participating were Deep Rock Oil Corp., McElreath and Suggett of Fort Worth, and the Gulf Oil Corp.

In eastern Oklahoma County Magnolia Petroleum Co. was moving in tools for its No. 1 Borgstrom, NW NW SE Section 28-13-1e, which is a south offset to the Jones pool discovery well. The discovery well, Hall-Briscoe's No. 1 Thompson, was pumping an average of 70 bbl. of oil a day through ripped casing at 4,796 to 4,808 ft.

J. E. Trigg and Hall-Briscoe's No. 1 Hughes, in NE NE SW Section 28-13-1e, southwest offset to No. 1 Thompson, had sand at 4,821-34 ft., total depth, and was pumping 70 bbl. of oil daily.

Seminole County

Culver and others' No. 1 Whitney, NE NW Section 10-5-5, had Hunton lime at 2,461 ft., Sylvester at 2,705-06 ft., total depth. Seven-inch casing was set at 2,462 ft., and 45 bbl. of oil was swabbed in 24 hours.

Magnolia Petroleum Co.'s No. 5 Reed, NW SW NE Section 26-5-7, had Misener at 3,900 ft., Hunton at 3,904-42 ft., total depth and pumped 65 bbl. of oil in 24 hours.

Edwards' No. 1 Long, a wildcat, SE NW NW Section 1-6-5, had lime at 2,685 ft., sandy shale at 2,945-63 ft., total depth at 3,004 ft. and was dry and abandoned.

New work in Seminole County: Magnolia Petroleum Co.'s No. 4-B Harjo, SW NE NE Section 14-7-6, location; Thompson's No. 4-C Harryman, NE SW SE Section 33-7-6, rig on ground; Commercial Drilling Co.'s No. 1 Jackson, SW SE NE Section 18-7-8, rigging up.

Pottawatomie County

Three failures were reported in Pottawatomie County. Atlantic Refining Co.'s No. 4 Burke, C NW NE Section 16-7-4, had Earlsboro at 3,504 ft., Hunton at 3,672 ft., dolomite at 4,120 ft., with no shows. Total depth was 4,229 ft.

Same company's No. 1 Abernathy, SE SW NE Section 24-11-4, recovered mud and water on drill-stem test at a total depth of 4,896 ft., in Wilcox sand, and was abandoned.

Sinclair Prairie Oil Co.'s No. 1 Deatheridge, NW NW Section 28-7-4, (old total depth 4,207 ft.) was drilled to 4,375 ft., and plugged back to 3,978 ft. where there was some oil in the hole. It was abandoned after perforating at 3,305-34 ft.

Mid-Continent Petroleum Corp.'s No. 7 Rogers, SW NE SW Section 5-9-5, cellar and pits; Dunnett's No. 5 McDonald, SE NW SE Section 31-11-4, rig; Rescher's No. 1 Brown, NE SE NE Section 15-7-4, old total depth 3,996 ft., drilling at 4,175 ft.; Burns' No. 1-A Bickford, SW SE NE Section 30-7-4, building rig.

Pawnee County

Sand Springs Home's No. 1-A Haven, C N½ SE Section 27-20-7, had Bartlesville sand at 2,660-2,712 ft., the hole filled with water and was abandoned.

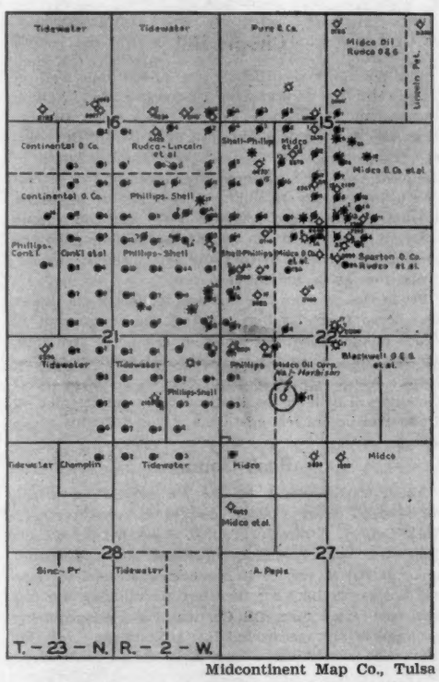
Reynolds' No. 4 Ackley, SE SW SE Section 14-20-9, pumped 7 bbl. of oil and 25 bbl. of water from Layton at 1,209-51 ft., total depth.

Watchorn's No. 11 Miller, NW NE SW Section 33-23-3, was temporarily abandoned after finding the Arbuckle dry at 4,195-4,582 ft., total depth.

Johnson's No. 1 Rich, NE SE NW Section 28-20-9, was drilling at 325 ft.

Okfuskee County

Summitt Drilling Co.'s No. 3 Summer, SE SW NW Section 18-10-11, had sand at 2,300 ft., total depth 2,305 ft., set 5-in. casing at 2,298 ft. and flowed 834 bbl. of oil in 24 hours.



Midcontinent Map Co., Tulsa

Midco Oil Corp. has started work at No. 1 Harbison. Section 22-23-2w, about ¼ mile east of nearest production in the Billings pool, Noble County, after completing a southeast extension well at No. 1 Travis. NW Section 27, for 2,800 bbl. daily

Titus' No. 1 Cornelius, SW NW Section 25-11-8, had Booch sand at 3,084-90 ft., total depth 3,120 ft. Gas flowed at an estimated 4,000,000 cu. ft. daily with a showing of oil. After shooting it flowed 120 bbl. of oil in 24 hours.

Smith's No. 4-A Loving, CWL SW NE Section 26-11-11, had sand at 2,040-50 ft., total depth, was shot and pumped 18 bbl. of oil in 24 hours.

Summitt Drilling Co.'s No. 2 Hildebrand, NW SE SW Section 18-10-11, cellar and pits.

Creek County

Central Commercial Co.'s No. 3 Ricks, NW SE SE Section 16-17-9, pumped 30 bbl. of oil daily from sand at 2,455-68 ft., total depth.

Swift's No. 2 Mussellem, C SW NE Section 18-18-10, had Peru at 1,940-83 ft., total depth, shot and pumped 12 bbl. of oil.

Midco Oil Corp.'s No. 2 Bruner, SW SW NW Section 29-17-11, produced 2,000,000 cu. ft. of gas and 10 bbl. of oil daily and was completed at total depth of 1,946 ft.

Cook and others' No. 2-A Horner, NE SE SE SE Section 14-17-12, had initial daily yield of 18 bbl. of oil at total depth of 1,379 ft., and was completed.

Lease Investment Co.'s No. 4 Darks, NE NW NW Section 28-14-10, was moving in machinery.

Estimated Daily Production

Estimated daily production for Oklahoma for the week ended May 4, and for the preceding week was as follows:

	Barrels	
	May 4	Apr. 27
Allen	5,500	5,575
Billings	6,050	6,150
Burbank	7,000	7,150
South Burbank	8,600	8,625
Balance Osage	16,550	16,600
Blackwell district	3,675	3,700
Bristow-Slick	6,000	6,050
Chandler	1,150	1,200
Crescent	2,150	2,100
Cromwell	2,875	3,000
Cushing-Shamrock	9,200	9,200
Duncan	3,700	3,725
Edmond	4,325	4,300
Fish	3,400	3,425
Fitts	16,600	18,150
Jesse	2,250	2,250
Graham-Fox	2,000	2,025
Gray	775	775
Healdton	8,825	8,825
Hewitt	3,700	3,700
Keokuk	3,125	3,150
Konawa	1,150	1,125
Lucien	8,000	8,050
Moore	1,975	2,000
Northeastern counties	16,800	17,000
Oklahoma City	98,500	95,500
Olympic	2,150	2,150
Ramsey	3,800	4,000
Sasakwa	1,550	1,550
Sholem-Alechem	2,750	2,800
Seminole district:		
Bowlegs	6,900	6,950
Carr City	2,400	2,400
Dora	2,000	2,050
Earlsboro	4,250	4,250
South Earlsboro	550	575
East Earlsboro	2,150	2,200
Little River	6,600	6,600
East Little River	675	700
Maud	625	625
Mission	1,250	1,250
Seminole	7,325	7,350
East Seminole	1,125	1,125
Searight	2,100	2,150
Total Seminole	37,950	38,225
St. Louis-Pearson	28,750	29,500
Tatums-Tussy	2,075	2,150
Tonkawa-Garber-Thomas	4,100	4,100
Wewoka	1,750	1,850
Yale-Jennings	3,500	3,525
Other pools	80,725	81,850
Total Oklahoma	412,975	415,050

Kiowa County

Gled Oil Co.'s No. 2 Watkins, NW SW NW Section 20-7n-17w, Hobart field, Kiowa County, had 500,000 cu. ft. of gas in lime at 1,004 ft., an estimated increase to 5,000,000 cu. ft. at 1,008, and was bottomed at 1,127 ft. Gas was killed and it flowed 1,008 bbl. of oil in 24 hours.

Henry's No. 1 Huff, a wildcat in the SW NW Section 32-7n-18w, was dry and abandoned at total depth of 1,784 ft.

Jackson County

Kerbow's No. 2 Dora, NE SW SE Section 11-1n-20w, had lime at 1,358 ft., total depth at 1,389 ft. and pumped 30 bbl. of oil daily.

Pendleton's No. 9 Stokes, SW NW SW Section 11-1n-20, an old well, was deepened from 1,406 ft. to 1,653 ft., but was dry and abandoned.

Ray's No. 2 Mathis, NW SW SE Section 32-1n-19w, waiting on cement 55 ft.; Kriss' No. 1-B Inklebarger, SE SW SW Section 3-1-20w, spudding; Cotner's No. 3 Robertson, NE SE SE Section 15-1n-20w, location.

(Continued on Page 130)

North and East Texas

By
D. H. STORMONT

Six New Wildcats Started in The Busy North Texas Area

WICHITA FALLS, Tex., May 6.—Six new wildcat locations kept North Texas' increasing deep exploratory campaign active for another week. Montague County, the center of the deep exploration, accounted for three of the locations, and for important developments in several of its active wildcats. The additional three wildcats were one each in Clay, Archer, and Baylor counties.

Sinclair Prairie Oil Co., one of the leaders in the North Texas play, is reported to have paid $50,000 cash for a 120-acre lease 1 mile east of the town of Nocona and about 1¼ miles from production in the Rogers & Rogers field. The company made a location for a 6,000-ft. Ellenburger lime wildcat in the NW cor. of the 120-acre tract which is in the SW cor. N½ Thomas R. Jackson Survey, Abstract 394. The location is about a mile west of the same company's No. 1 Whaley, Block 16, B.B.B.&C. Survey, an Ellenburger lime failure drilled about a year ago, during the early developmental days of the Rogers & Rogers field. The Ellenburger was topped at 5,512 ft. and the hole was quit at 5,570 ft.

Clay County

Two areas in Clay County drew attention as the week closed. On the junction of Clay, Archer, and Jack counties, S. D. Johnson made a location for a lower Strawn wildcat. The location is about 3 miles southwest of the discovery well brought in 2 months ago by Shell Oil Co., Inc., on the Henderson tract in the extreme southwestern corner of Clay County. The new location is No. 1 R. H. Oliver, Section 2646, T.E.&L. Survey.

A south offset to L. T. (Bobby) Burns' No. 1 Browning, the discovery well of the Burns field of southwestern Clay County, Shell Oil Co., Inc.'s No. 1 Davis topped the Cado lime at 5,260 ft. and drilled lime to 5,690 ft., where the formation softened. Soft formations were drilled to 5,719 ft., where operations were shut down preparatory to making a drill-stem test.

Baylor County

R. T. Myers has staked No. 1 W. H. Portwood, a 1,500-ft. rotary wildcat, in the southwestern corner of Baylor County. It is 150 ft. from the north and east lines of Section 19, Block 45, H.&T.C. Survey, Abstract 214, 13 miles southwest of Seymour.

In the new Hall-Jordan Palo Pinto lime field in the eastern part of Baylor County, British American Oil Producing Co. was drilling plug from its No. 2-L Green, Section 8, J. L. Hix Survey, ¼ mile northwest of the discovery well. The test topped the Palo Pinto at 3,074 ft. and drilled saturation from 3,075 to 3,078 ft., total depth. Casing was cemented on top of the lime. The field was discovered about 3 weeks ago and marked the first Palo Pinto lime production for the county.

Archer County

The first deep wildcat location on the Turberville ranch of northern Archer County was staked by L. T. Burns for No. 1 Mrs. J. Turberville. The drill site is 467 ft. east and south of the SW cor. Block 149, but in Block 154, Robert Carson Survey, Abstract 80, 5 miles southeast of the Mankins deep field.

K.M.A. Ordovician

The K.M.A. field's prospective 1-mile-southeast extension to its recently developed Ellenburger lime production failed when salt water broke through in Magnolia Petroleum Co.'s No. 1 Thom, W. H. Spillers Survey, in extreme northern Archer County and 6,000 ft. south of the discovery well, which was Fain-McGaha Oil Corp.'s No. 16 Griffin, completed 2 weeks ago for a daily potential of 2,456 bbl. No. 1 Thom topped the Ellenburger about 100 ft. lower than the discovery well and drilled only a few feet of saturation between 4,419 and 4,423 ft. After plug was drilled the well was washed in flowing about 80 bbl. of oil hourly with some water. Later testing showed only water.

EASTERN TEXAS

DALLAS, Tex., May 6.—Only one new wildcat location marked a dull week in the eastern Texas district, Arkansas Fuel Oil Co. for No. 1 Carter-Kelly, in Angelina County, 3½ miles southeast of Lay, and in the T.&N.O. Survey 4.

Chapel Hill

Sun Oil Co. has officially completed one well at Chapel Hill and is preparing to spud another. Failing to make an oil producer, Sun Oil Co.'s No. 1 Huddle, Dickerson Survey, 2 miles south of Hunt Oil Co.'s discovery gas and distillate well and 4 miles south of Shell Oil Co., Inc.'s discovery oil producer of several months ago, made 155 bbl. of distillate in 24 hours, flowing, with casing pressure 1,970 lb. and tubing pressure 2,000 lb. At the end of the 24-hour gage the pressures had declined to 1,930 and 1,940 lb., respectively, for casing and tubing.

Production is from the Rodessa section of the lower Glen Rose from 7,385 to 7,410 ft. In an attempt to locate farther down the flank of the great structure, Sun Oil Co. is preparing to spud No. 1 Sanders, Manier Survey, about ¾ mile south of the No. 1 Huddle. No. 1 Sanders will drill to the Pettit section and attempt oil production before testing in the gas and distillate pay zone.

Rusk County

About 6 miles south of the Willow Springs distillate area of Gregg County, and in extreme northern Rusk County, Whittington's No. 1 Kangerga, Ignacio Castro Survey, deep Trinity projected test, is still shut down at 300 ft., where it has been bottomed for several weeks. Activity for the area surrounding the test was seen when Fohs Oil Co. was reported acquiring a spread of acreage around No. 1 Kangerga.

EAST TEXAS FIELD COMPLETIONS
(One-hour gages)

Gregg County—Longview Area

Coastal Development Co.'s No. 24 J. J. Flewellen, 3,671-85 ft., 40 bbl.

Gregg County—Kilgore Area

James E. Kemp's No. 12 A. A. King, 3,520-70 ft., 35 bbl. James E. Grey's No. 2 I.O.O.F., 3,753-64 ft., 45 bbl.

Rusk County—Joiner Area

P. G. Lake's No. 6 B. F. Maxwell, 3,673-3,713 ft., 43 bbl.

Smith County—Joiner Area

M. H. McMurray's No. 35 G. A. Turner, 3,795-96 ft., 60 bbl.

Upshur County—Longview Area

Coastal Development Co.'s No. 26 J. J. Flewellen, 3,655-67 ft., 43 bbl.

EAST CENTRAL TEXAS COMPLETIONS
(24-hour gages)

Anderson County

Long Lake field: Hunt Oil Co.'s No. 2 Robinson-Hombs, 5,160-5,345 ft., 90 bbl. oil and 44,500,000 cu. ft. of gas.

Cherokee County

A wildcat, Shell Oil Co., Inc.'s No. 1 S. H. Maness, J. M. Musquez Survey, dry and abandoned at total depth of 4,788 ft.

Franklin County

Talco field: Humble Oil & Refining Co.'s No. 18 Penn-fee, 4,218-86 ft., 560 bbl., pumping.

Henderson County

A wildcat, Ed Parsons' No. 1 J. E. Davis, K. H. Douglas Survey, 3 miles south of Eustace, dry and abandoned at total depth of 3,953 ft.

Trinity County

A wildcat, Gossage's No. 1 First National Bank, B. F. Wright Survey, ½ mile south of Trinity, abandoned location.

WEST CENTRAL TEXAS COMPLETIONS
(24-hour gages)

Callahan County

Hatchett field: F. J. Borman's No. 1 Harris, dry and abandoned at 455 ft.

Coleman County

Morris field: Anzac Oil Corp.'s No. 6-C Morris, 2,177-89 ft., 136 bbl. oil in 5 hours.

Goldsboro field: North-South Oil Co.'s No. 7 Newton, 3,824-60 ft., 42 bbl.

Novice field: States Oil Corp.'s No. 1 Owens, top Ellenburger lime at 4,334 ft., drilled to total depth of 4,376 ft., plugged back to 3,603-33 ft., for 37 bbl. daily.

A wildcat, Worsham's No. 1 Williams, Section 18, Block 2, T.&N.O. Survey, dry and abandoned at total depth of 3,735 ft.

Eastland County

A wildcat, Stiles' No. 1 Hearn, SE SW Section 15, Block 2, H.&T.C. Survey, abandoned location at total depth of 100 ft.

Jones County

Lewis field: Fain-McGaha Oil Corp.'s No. 3 Burns, 1,930-36 ft., 175 bbl. Fain-McGaha Oil Corp.'s No. 11 Lewis, 1,931-39 ft., 130 bbl.

Palo Pinto County

Strawn field: W. K. Gordon's No. 4 Ringo, 3,555-65 ft., 1,500,000 cu. ft. of gas. Francisco & Miles' No. 1 Mott, SW NW Section 72, Block 3, T.&P. Survey, dry and abandoned at total depth of 1,110 ft.

Shackelford County

Ghio field: W. L. Baker's No. 1 Ghio, dry and abandoned at 875 ft. J. P. Ray's No. 1 M. Harbough, 585-600 ft., 8 bbl. A wildcat, Mollenkopf's No. 1 Jemeyson, Section 489, T.E.&L. Survey, dry and abandoned at 484 ft.

Albany field: J. L. Hart's No. 5-A Clausell, 523-34 ft., 10 bbl.

Sedwick field: N. Brossenbacher's No. 4 Hickman, 649-51 ft., 15 bbl. Roark's No. 5 Hickman, 653-662 ft., 25 bbl. Meredith & Gant's No. 1 Hickman, dry and abandoned at 745 ft.

Cook field: Roeser-Pendleton and Continental Oil Co.'s No. 7-A-113 Cook, dry and abandoned at 1,625 ft.

(Completed on Page 121)

Crockett Discovery Prompts Starting of Eight Other Tests

By D. H. STORMONT

MIDLAND, Tex., May 6.—Western Crockett County's new wildcat discovery of 2 weeks ago, which was at first hailed as a "second Yates field opener," has settled down to a steady gas flow of about 50,000,000 cu. ft. daily.

Three offsets to the discovery well have been staked while three other tests drilling ahead are less than a mile from the strike. Originally hailed as an important discovery, Soma Oil & Gas Syndicate's No. 1 Noelke, SW cor. NW Section 30, Block GG, H.E.&W.T. Survey, 4 miles east of Pecos County's Yates field, came in about 2 weeks ago flowing at the rate of about 50,000 bbl. daily.

Production fell off rapidly and declined to about 25 bbl. daily after the first few days of testing. The lime pay of the Yates field is known to yield good recovery over a long period, but the sand body is noted for its high initial yield and sudden decline.

M. & M. Drilling Co.'s No. 1 Bouscaren, SE cor. of NW Section 29, Block GG, H.E.&W.T. Survey, about ⅞ mile north of the discovery well, was last reported drilling below 500 ft. About ¾ mile northwest of the strike is a location being prepared for spudding by Mauldin & Salmon as No. 1 Noelke. SE cor. Section 56, Block GG, H.E.&W.T. Survey. About ½ mile west and slightly south is a wildcat outpost staked by Henry Schooler for No. 1 Noelke, extreme NE cor. Section 67, Block 1, I.&G.N. Survey.

A few of the farther-out wildcats include Moore Brothers, Inc.'s No. 2 Noelke, C N½ N½ Section 65, Block 1, I.&G.N. Survey, about 2½ miles southwest of the discovery. It is being made ready for drilling. Some 5½ miles southeast of the discovery and in the NW cor. SE Section 10, Block GG, H.E.&W.T. Survey, Moore Brothers, Inc.'s No. 1 Noelke is drilling below 1,320 ft., apparently below the Yates sand.

Deep Discovery Gaged

Final gage of 5,783 bbl. daily has been assigned the Gulf Oil Corp.'s No. 1-A Tubb, Section 20, Block 27-B, P.S.P. Survey, new Ordovician oil pool discovery of last week. The field is located on the south edge of the Tubb area and in the western part of Crane County.

Apco Ordovician

A new 2-mile north outpost to Pecos County's Ordovician oil area, the Apco field, has been staked by R. G. (Tex) Pattillo. It is his No. 1 P. E. O'Neil and is 660 ft. from the SE and SW lines of Section 74, Block 10, H.&G.N. Survey. It will be drilled with cable tools and is contracted to 5,000 ft.

Another recent Ordovician location for the county is Plymouth Oil Co.'s No. 1 Levy, Section 104, Block 8, H.&G.N. Survey, 17 miles northwest of the Apco field. It is bottomed at 1,440 ft. and is reaming hole.

Wildcat Locations

Three wildcat locations were reported for the district, one each in Crane, Gaines, and Mitchell counties. Gulf Oil Corp. located its No. 1-F University in the SE SE Section 22, Block 31, University Lands Survey, in Crane County. In Gaines County Richmond Drilling Co., Jim Mascho Oil Co., and William F. Hanagan located No. 1 G. R. Brumley, NE NE Section 17, Block 12-A, P.S.L. Survey. It is projected to 5,000 ft. and is 1¾ miles northeast of the old Eastland Oil Co.'s No. 1 Dunbar, which showed some oil but was later abandoned at a total depth of 4,640 ft. The Brumley location is about 2 miles east of the Lea County, New Mexico, line.

In Mitchell County, and in the same section with a wildcat test which is indicating the discovery of a new field, N. V. Hilbun located No. 1 B. W. Jackson, NE cor. NW Section 82, Block 97, H.&T.C. Survey. The same operator's No. 1 E. T. Strain, also in Section 82, is shut down for orders at 1,790 ft. after drilling saturation from 1,706 to 1,732 ft. and from 1,736 to 1,739 ft. When bottomed at 1,736 ft. the well made 4 bbl. daily. Testing will be resumed this week.

Terry County

The first commercial oil producer in Terry County, George Livermore's No. 1 Jacobson, ¾-mile-south extension producer for Hockley County's Slaughter field, was making a steady flow of 25 bbl. hourly or at the rate of 600 bbl. daily. The flow was made after a 2,500-gal. acid treatment. Previous to treatment the well had made 8 bbl. hourly on a 24-hour gage or a total of 192 bbl. daily. It is located in the NE cor. Section 6, Block 11-D, C.&M. Survey, definitely bringing the Slaughter field play into Terry County.

WEST CENTRAL TEXAS

FORT WORTH, Tex., May 6.—Ten new wildcat locations scattered through six counties headed the week's development in West Central Texas. Of the 10 locations, 3 were in Jones, 2 in Shackelford. 2 in Brown, and 1 each in Callahan, Parker, and Palo Pinto counties.

In southwestern Jones County J. D. Sandefer, Jr., Breckenridge, has staked a wildcat west of the Noodle Creek field. It will be No. 1 Hudspeth, center of a 160-acre tract in Subdivision 22, Edward Miles Survey 219.

Another of Jones County's new tests and scheduled for spudding before May 10 is George Callihan's No. 1 J. J. Steele, located in the NE cor. SE Section 11, Block 15, T.&P. Survey, southeast of Anson. It is in the vicinity of two tests drilled some time ago which both showed a little free oil but were later abandoned.

About a mile north of the Akard field in Jones County Merry Brothers and Perini have made location for their No. 1 C. S. Walker, southeast corner of the Walker tract, G. Martinez Survey 137.

Jones County's indicated Gunsite lime field opener of last week, J. E. Farrell's No. 1 Reid, Corinth Community, north of Anson, is making about 12 to 15 bbl. daily, pumping, after treatment with 1,000 gal. of acid. Production is from a total depth of 2,566 ft. The discovery well is in Section 31, D.&D.A. Survey. South of Anson and in the G. Martinez Survey, W. I. Southern, Inc.'s No. 1 A. A. Hayden, another Gunsite lime field indicator of last week, has passed up the horizon and is drilling below 2,500 ft. It was estimated good for 50 bbl. daily last week from a total depth of 2,475 ft. but after an acid treatment salt water broke through and ruined the well. It is deepening toward the Swastika lime.

Shackelford County

Shallow Cook sand production in northeastern Shackelford County will be sought by two wildcats. August P. Schkade located No. 1 J. L. Godwin in the NE Section 385, T.E.&L. Survey, ½ mile south of a 1,000-ft. producing area drilled several years ago by Roeser & Pendleton, Inc.

Two miles northwest of No. 1 Godwin, T. L. Blanton staked No. 1 W. F. Tucker, SW Section 552, T.E.&L. Survey.

Brown County

In Brown County C. H. Robertson has spudded and is drilling below 724 ft. at No. 1 McGary & Gibbs, in the center 160 acres of Section 1, H.T.&B. Survey.

Brown County's other new wildcat location was made by J. J. Poteet as No. 1 R. L. Williams, NE cor. J. F. Roberts Survey 470. Machinery is being moved in for immediate spudding. Both of the locations are for 1,000-ft. tests.

Other Wildcats

Callahan County, which has been receiving added activity in the past few months, now has nine drilling wells and 12 other locations made to rank as one of West Central Texas' most active counties. During the past week E. Johnson staked a wildcat location for No. 3 M. Hughes, SE cor. NE NE Section 127, B.B.B.&C. Survey.

In extreme northern Parker County E. R. Marchman, who several weeks ago made a location for a deep test, No. 1 G. W. Keeling, has announced that the well will be started as a shallow test. It is on a 5,000-acre block just southwest of Springtown and was originally contracted to 5,300 ft. It is now projected to 2,400 ft. but sufficient hole size will be maintained to that depth to enable it to be carried to the 5,300-ft. level should the operator later decide to do so. It is located in the Frances Liddy Survey, Abstract 829.

Three miles south of Dalton City in Palo Pinto County Fred Guyer has set surface casing in No. 1 Dalton, new wildcat test located in the Dalton Survey, Abstract 153. It is contracted to 4,100 ft.

WEST TEXAS FIELD COMPLETIONS

(24-hour gages)

Andrews County

Means field: Humble Oil & Refining Co.'s No. 79 J. S. Means, 4,500-25 ft., 367 bbl. Sinclair Prairie Oil Co.'s No. 2-69 University, 4,287-4,330 ft., 496 bbl.

Crane County

McElroy field: Gulf Oil Corp.'s No. 213 McElroy, 2,748-2,987 ft., 633 bbl. Gulf Oil Corp.'s No. 214 McElroy, 2,665-2,831 ft., 5,974 ft. Opening a new Ordovician oil field, Gulf Oil Corp.'s No. 1-A J. B. Tubb topped the Ellenburger lime at 5,760 ft. and drilled saturation to 5,783 ft., completed for 5,130 bbl. daily with 5¼ per cent formation water, flowing naturally through tubing.

Ector County

Foster field: Barnsdall Oil Co.'s No. 5 Mae Wicher, 4,020-4,180 ft., 615 bbl. Schermerhorn Oil Co.'s No. 9 Johnson, 4,060-4,196 ft., 980 bbl. Schermerhorn Oil Co.'s No. 3-C Johnson, 4,075-4,236 ft., 940 ft. Sinclair Prairie Oil Co.'s No. 9 Johnson, 4,170-4,265 ft., 411 bbl. Stanolind Oil & Gas Co.'s No. 38-A E. F. Cowden, 4,000-4,170 ft., 515 bbl. Stanolind Oil & Gas Co.'s No. 46-A E. F. Cowden, 3,985-4,130 ft., 206 bbl.

Goldsmith field: Gulf Oil Corp.'s No. 272 Goldsmith, 4,165-94 ft., 44 bbl.

North Cowden field: Stanolind Oil & Gas Co.'s No. 1-B Midland Farms, 4,375-4,545 ft., 644 bbl. Western & Southern Oil Co.'s No. 1 R. W. Smith, 4,375-4,431 ft., 15 bbl.

Jordan field: Cities Service Oil Co.'s No. 2-C University, 3,492-3,583 ft., 711 bbl.

Gaines County

Seminole field: Amerada Petroleum Corp.'s No. 2 Sawyer, 5,244-5,335 ft., 672 bbl. Osage Drilling Co.'s No. 8-A Tippett, 5,110-5,318 ft., 713 bbl. Osage Drilling Co.'s No. 10-A Tippett, 5,145-5,345 ft., 508 bbl.

Cedar Lake field: Stanolind Oil & Gas Co.'s No. 2 American Warehouse, 4,600-4,740 ft., 502 bbl. Stanolind Oil & Gas Co.'s No. 1 Edith Johnson, 4,560-4,750 ft., 663 bbl.

Hockley County

Slaughter field: Awoeb Oil Co.'s No. 4 Davis, junked and abandoned at total depth of 3,170 ft. Honolulu Oil

(Completed on Page 121)

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Among the Drilling

ALLEN & MORRIS are completing a second producer in Corpus Christi Bay, offshore from the East White Point field, Texas, for W. R. R. Oil Co. They have another operation in the field for the same company, and have moved another rotary to the field for Sinclair Prairie Oil Co.'s No. 1 State. One operation is reported in the Agua Dulce field for Union Production Co., while another rotary is running at the West Ranch field for American Liberty Oil Co.

BILL TAYLOR opened a gas and distillate field in the East Bernard area, northern Wharton County, Texas, with the completion of Cockburn Oil Corp.'s No. 1 Leveridge. The well was drilled to a total depth of 8,461 ft., and was completed through casing at 8,070-90 ft.

HOUSH & THOMPSON started drilling operations of Harrison & Abercrombie's No. 1 Dixon, a projected Tertiary Wilcox test located south of the town of Shepherd in the S. Cole Survey, Texas.

E. J. GRACEY spudded Shell Oil Co., Inc.'s No. 2 Kirby-West, a Tertiary Wilcox test in the P. A. Sublett Survey, Ace field, Polk County, Texas.

J. W. FRAZIER is drilling below 6,600 ft. in Shell Oil Co., Inc.'s No. 1 Coline, a projected 8,500-ft. Wilcox test situated southwest of Goodrich in San Jacinto County, Texas. In the Genoa area, Harris County, a wildcat is being started for Hamill, Smith and others on the C. B. Carter lease in the Dickinson Putnam Survey.

JORDAN Drilling Co. is moving a rotary to Grimes County, Texas, where a joint wildcat test with D. M. Wallace will be drilled on the L. Dodd lease, about 2½ miles east of Singleton in the Cyrus Campbell Survey. Projected depth is 3,750 ft.

CROSBY Drilling Co. is preparing to test a shallow sand cored in the company's joint test with T. G. Markley at the Bayou Blue field, Iberville Parish, Louisiana.

T. A. CARLTON has moved a rotary to the South Houston field, Harris County, Texas, and is nearing the expected pay horizon in J. T. Driscoll's No. 1 C. P. Williams.

MARTIN THOMPSON Drilling Co. is coring below 5,370 ft. in the company's No. 1 Highland Farms, a wildcat located near the Highland city limits in the Jessie White Survey, Texas.

RICHMOND Drilling Co., Odessa, Tex., will drill, in joint ownership with Jim Mascho Oil Co. and William F. Hanagan, a 5,000-ft. wildcat test in Gaines County, West Texas. It will be No. 1 G. R. Brumley, located in the NE cor. Section 17, Block 12-A, P.S.L. Survey. One and three-quarters miles to the southwest is the old Eastland Oil Co.'s No. 1 Dunbar, which pumped about 3 bbl. of oil daily from 4,640 ft. after three-stage acid treatment. The test was abandoned as noncommercial. The new location falls about 2 miles east of the Lea County, New Mexico, line.

HARRY W. BASS Drilling Co., Dallas, Tex., has staked an outpost test to the Seminole field of Gaines County, West Texas. On a farmout recently acquired from Standard Oil Co. of California, the firm has located No. 1 Austin, NW cor. Section 194, Block G, W.T. Survey, ½ mile south of production on the east side of the field. The outpost brings the field's development to within only a short distance of the west city limits of the town of Seminole.

GEORGE CALLIHAN, contractor and producer of Abilene, Tex., is scheduled to spud by May 10 a wildcat test about 4 miles north of the Guitar pool in Jones County, West Central Texas. The test will be the operator's No. 1 J. J. Steele, NE SE Section 11, Block 15, T.&P. Survey, near the town of Hawley and between two wildcats drilled some time ago which were reported to have checked favorably on markers.

L. T. (BOBBY) BURNS, Wichita Falls, Tex., has given Archer County, North Texas, another deep exploratory wildcat. The operator located his No. 1 J. Turberville in Block 154, Robert Carson Survey, Abstract 80, 5 miles southeast of the Mankins deep field and on the large Turberville ranch. It is contracted to the Caddo lime expected between 4,700 and 5,000 ft.

STERN & WOMACH, drilling company of Houston, Tex., is moving in heavy rig and is building 122-ft. derrick for a 6,500-ft. wildcat test in Sabine County, Texas border, for Charlotte Oil Co., San Antonio. Test will be No. 1 Well, in the Larkin Gross Survey, west of the old C.C.C. camp, and near Pineland, southwest part

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of the county. It is scheduled to go to the Georgetown lime at 6,500 ft. and is located on a 6,000-acre block assembled by the Charlotte company after extensive geophysical exploration in the area.

T. E. KIRKSEY Drilling Co., Atoka, Okla., was drilling below 600 ft. at No. 1 Baskett Brothers, NW SE SE Section 7-3s-10e, wildcat in Atoka County, Oklahoma, about 20 miles northeast of the Cumberland pool, Bryan County. Several other Atoka County wildcats are due to be started soon as a result of the Cumberland discovery.

OLIVE Drilling Co. recently completed the 100th oil well drilled by Coralena Oil Co., Tulsa, in Kansas since completion of the company's first well in that state in October 1935. The company drilled only one dry hole while drilling the 100 producers. Six of the wells were discovery producers.

CLAY BROTHERS, New Mexico drilling contractors, were rigging up rotary to drill Texas Co.'s No. 1-A Elliott, Section 11-20-34e, wildcat west of the Monument field, Lea County, New Mexico. Plans are to drill to 3,600 ft. with rotary and then standardize to drill to 4,500 ft.

L. B. HABERLE, contractor and producer from Jacksonville, is associated with and will drill for Bob Waters of Hico a series of wildcat tests in Hamilton County, West Central Texas. Mr. Waters announced in Dallas last week that three deep 4,000-ft. Ellenburger tests are planned for his 37,000-acre block in the northern part of the county. Mr. Haberle is reported moving in equipment for the first test which is in the 204-acre Art Oates tract, Francis Hughes Survey, 7 miles northeast of Hamilton.

FRANK NEWSOM, of Ada., Okla., has contracted to drill Morgan, Flynn, Cobb & Wharton's No. 1 Brown, Section 30-3n-5e, wildcat on the northeast flank of the Arbuckle Mountains and northwest of Fitzhugh, Pontotoc County, Oklahoma. Cable tools were being moved in. It is scheduled to test sands in the Simpson series.

BOB MILLER, contractor of St. Joseph, Mo., was building rig at American Oil & Gas Corp.'s No. 1 Thompson, SW SW Section 30-58-31w, wildcat in DeKalb County, Mo., in the Forest City basin. Rig was moved from location east of St. Joseph, Buchanan County, where Miller drilled a dry hole last year.

SIMPSON-ROODHOUSE Drilling Co., Oklahoma City, Okla., was scheduled to start work May 10 at No. 1 Norris, NW NE SE Section 9-5-3e, one location north of production in the Byars pool, McClain County, Oklahoma, on the south bank of the Canadian River, which is the boundary between McClain and Pottawatomie counties.

SOUTHWEST Drilling, Inc., was moving in 2,200 ft. of 8¼-in. pipe which was to be run to total depth of 2,150 ft., when drilling is resumed at the No. 1 Conchas Development Co., NW NE Section 34-17-21e, wildcat in San Miguel County, New Mexico. The well has been shut down for several weeks.

Drilling crew of A. W. Gerson Drilling Co., Wood River, Ill. From left to right: W. D. Upton, derrickman; D. E. Dole, motorman; J. B. Hooker, floorman; G. H. Doss, toolpusher; and E. C. (Nehi) Bounds, driller

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Kansas Developments

By
DAL DALRYMPLE

Two Stafford Areas Extended; Enlarge Stoltenberg Oil Pool

The Max-South Sittner areas in Stafford County, Kansas, were extended by two outpost producers the past week. Other field developments included extensions of the Stoltenberg pool in Ellsworth County and the Lost Springs pool in Marion County.

Stanolind Oil & Gas Co.'s No. 1 Krug, C W½ NE SW Section 2-22-12w, extended South Sittner production ¼ mile southward. It was acidized and completed for top allowable potential of 3,000 bbl. of oil daily, based on draw-down method and calculation. Production was from Arbuckle lime at total depth of 3,564 ft. The nearby Max pool was extended ½ mile southeastward at the same company's No. 1 Helmers, CWL NE NW Section 1-22-12w. It was bottomed at 3,560 ft. in Arbuckle lime and oil was swabbed at the rate of 5 bbl. an hour on preliminary tests. Operators were preparing to take potential test.

A ½-mile eastward extension of the Stoltenberg pool was indicated at Gulf Oil Corp.'s No. 1 Malir, CWL SW NE Section 16-16-10w. It had Arbuckle lime at 3,317-22 ft., tubing was run and the crew was due to take potential test over the week end. It is ½ mile southeast of production, a similar distance east and northwest of production, thus opening to development a considerable area between two sectors of the pool.

The Lost Springs pool was extended ½ mile north at R. E. Youker's No. 1 McNicol, SE SE NW Section 3-17-4e. It had initial daily yield of 146 bbl. of oil from Mississippi lime at total depth of 2,340 ft.

When the Corelana Oil Co. of Tulsa recently completed No. 6 Dumler, CSL N½ NW Section 36-15-14w, Trapp pool, Russell County, it brought the number of oil wells drilled by the company in Kansas to an even 100. It had Arbuckle lime at 3,315 ft., total depth 3,320 ft., and on draw-down test made daily potential of 3,167 bbl. of oil, naturally. The company's production in Kansas is confined to the Trapp, Coralena and Hall pools. The 100 producers were drilled in less than 5 years, the company's first Kansas producer being completed in October 1935 at No. 1 Berrick, NE NW NE Section 6-15-13w, opening the Berrick pool, since combined with the Hall pool. Only one dry hole has been drilled by the company in Kansas since that first well. In addition to the Berrick discovery, five other Coralena wells opened pools, including the Trapp pool; North Trapp, now included in Trapp; Coralena pool; Smoky Hill pool, and South Letsch pool, now combined with the Hall pool. Drilling operations are carried on by Coralena's subsidiary, the Olive Drilling Co.

Russell County

Three completions were reported in the Trapp pool of Russell County.

W. I. Southern's No. 4-C Sellens, C E½ SE SE Section 29-15-13w. Arbuckle lime was topped at 3,332-34 ft., total depth; pumped 303 bbl. of oil in 8 hours.

Cities Service Oil Co.'s No. 9-A Bender, W½ E½ NE Section 26-15-14w, found Arbuckle at 3,340-49 ft., total depth; pumped 114 bbl. of oil in 8 hours.

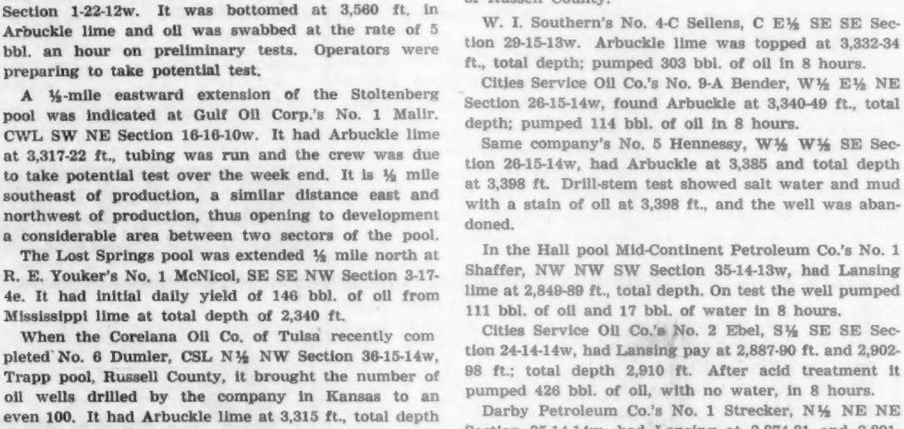
Same company's No. 5 Hennessy, W½ W½ SE Section 26-15-14w, had Arbuckle at 3,385 and total depth at 3,398 ft. Drill-stem test showed salt water and mud with a stain of oil at 3,398 ft., and the well was abandoned.

In the Hall pool Mid-Continent Petroleum Co.'s No. 1 Shaffer, NW NW SW Section 35-14-13w, had Lansing lime at 2,849-89 ft., total depth. On test the well pumped 111 bbl. of oil and 17 bbl. of water in 8 hours.

Cities Service Oil Co.'s No. 2 Ebel, S½ SE SE Section 24-14-14w, had Lansing pay at 2,887-90 ft. and 2,902-98 ft.; total depth 2,910 ft. After acid treatment it pumped 426 bbl. of oil, with no water, in 8 hours.

Darby Petroleum Co.'s No. 1 Strecker, N½ NE NE Section 25-14-14w, had Lansing at 2,874-81 and 2,891-2,900 ft., total depth 2,901 ft. It pumped 587 bbl. of oil in 8 hours.

New work in Russell County was as follows: Stanolind Oil & Gas Co.'s No. 9 Roesner, N½ NE SW Section 9-15-13w, cellar. Shell Oil Co., Inc.'s No. 2 Sellens, NE SW SW Section 33-15-13w location. Cities Service Oil Co.,'s No. 2 Resner, SW NE SW Section 23-15-14w, building rig. Liggett and others' No. 1-A Durham, S½ NE NE Section 20-11-15w, shut down at 438 ft. Skelly Oil Co.'s No. 1 Colliver, S½ NW SE Section 28-14-13w, digging cellar. Texon's No. 1 Hall, W½ NW NE Section 35-14-13w, rigging up. J. A. Aylward's No. 2-A Solbach, NE NW NE Section 31-14-14w, cellar.



Midcontinent Map Co., Wichita

The South Sittner pool, Stafford County, was extended ½ mile southward at Stanolind Oil & Gas Co.'s No. 1 Krug, SW Section 2-22-12w, and the nearby Max pool was extended southeastward at the same company's No. 1 Helmers, NW Section 1

Estimated Daily Production

Estimated daily production for Kansas for the week ended May 4, and for the preceding week was as follows:

	Barrels	
	May 4	Apr. 27
Oxford City	750	750
Burrton	8,000	8,050
Ritz-Canton	3,950	4,000
Graber	2,100	2,050
Hollow-Nikkel	1,600	1,700
Lerado	550	600
Voshell	1,450	1,500
Wellington	1,700	1,750
Ellsworth County:		
Lorraine	1,400	1,450
Other pools	1,335	1,380
Rice-Barton counties:		
Bloomer	2,600	3,600
Chase	3,700	3,000
Geneseo	2,650	1,900
Raymond	300	550
Silica	8,500	8,550
Keesling	650	700
Wherry	2,850	3,200
Miscellaneous Rice	1,965	1,965
Miscellaneous Barton	6,050	6,190
Trapp district	10,250	10,750
Balance Russell County	13,250	13,950
Sedgwick County	3,200	3,200
Ellis County:		
Bemis	8,150	6,200
Miscellaneous	6,530	7,490
Kingman County	615	730
Stafford County	6,660	7,295
Greenwood County	7,750	7,900
Eldorado	7,200	7,250
Other fields	31,945	31,440
Total Kansas	147,650	152,600

McPherson County

E. B. Shawver's No. 4 Union Life, E½ NW SE Section 18-17-1w, Roxbury pool, McPherson County, topped Mississippi lime at 2,626-36 ft., total depth, was acidized and pumped 522 bbl. of oil in 8 hours. Initial potential was 1,565 bbl.

A. S. Wright's No. 1 Krehbiel, C SW NW Section 25-19-2w, Ritz pool, had Mississippi lime at 2,944-55 ft., total depth at 2,962 ft., pumped 114 bbl. of oil in an 8-hour test and made potential of 342 bbl.

Republic Natural Gas Co.'s No. 2 Mattson, C N½ SW SW Section 19-20-5w, Bornholdt area, found Mississippi pay at 3,305-08 ft., total depth 3,323 ft. and flowed 33 bbl. of oil per hour.

Continental Oil Co.'s No. 1 Knackstedt, C N½ NE NW Section 30-20-5w, reached Mississippi lime at 3,278 ft., bottomed at 3,350 ft. and flowed 258 bbl. of oil in 6 hours. Potential was 1,370 bbl.

Republic Natural Gas Co.'s No. 2 Knackstedt, C N½ NW NW Section 30-20-5w, had Mississippi lime from 3,279-3,345 ft., total depth, pumped 118 bbl. of oil in 8 hours and made potential of 354 bbl.

New work in McPherson County includes Republic Natural Gas Co.'s No. 2 Swanson, N½ NW SW Section 18-20-5w, rigging up. Ohio Oil Co.'s No. 1 Linguist, W½ NE SE Section 19-20-5w, location. W. H. Molton's No. 1 Briggs, W½ SW SW Section 20-20-5w, waiting on cement, 156 ft. Same company's No. 2 Briggs, E½ SW SW Section 20-20-5w, location. Ohio Oil Co.'s No. 2 Peterson, E½ NW SW Section 29-20-5w, location.

Barton County

Shell Oil Co., Inc., completed three wells in the Trapp pool of Barton County. No. 10-B Bitter, NE SW SW Section 5-16-13w, found Arbuckle lime at 3,335-42 ft., total depth. The well swabbed 254 bbl. of oil in 5

hours. No. 10-A Hoffman, SW NW SW Section 7-16-13w, was completed at 3,342 ft. Lansing lime was found at 3,108-18 ft. and 3,089-98 ft. On an 8-hour test it swabbed 234 bbl. of oil. Same company's No. 6-B Ehrlich, SW NE SW Section 1-16-14w, had Arbuckle at 3,342-52 ft., total depth. It swabbed 164 bbl. of oil in 4 hours from 700 ft. off bottom, and was completed for maximum allowable of 3,000 bbl. daily.

Derby Oil Co.'s No. 7 State, NW SE SW Section 11-20-11w, Silica pool, had Arbuckle from 3,279-87 ft., total depth, swabbed 30 bbl. of oil hourly.

New work in Barton County is as follows: Shell Oil Co., Inc.'s No. 1-C Bitter, W½ E½ SW Section 5-16-13w, rigging up. Same company's No. 7-B Ehrlich, SE NW SW Section 1-16-14w, surface hole. Phillips Petroleum Co.'s No. 6 Bitter, NE SW NE Section 6-16-13w, waiting on cement at 603 ft. Stanolind Oil & Gas Co.'s No. 3 Deal, E½ E½ NE Section 35-16-13w, location. Same company's No. 3 Schmidt, N½ N½ SE Section 35-19-11w, location. Indian Territory Illuminating Oil Co.'s No. 6 Hoffman, N½ SE NE Section 1-16-14w, cellar. C. L. Carlock's No. 1 Hammer, a wildcat in the S½ SE NW Section 35-19-12w, was a location. Alpine Oil & Royalty Co.'s No. 1 Schartz, E½ NE SE Section 2-20-12w, location. Stanolind Oil & Gas Co.'s No. 3 Werries, S½ S½ SW Section 10-20-1w, location. Same company's No. 15 Stueckman, S½ N½ SW Section 11-20-11w, rigging up rotary.

Rex & Morris and others' No. 1 Lane, SW SW NW Section 21-26-7, Guenther pool, Butler County, topped Mississippi lime at 2,758-71 ft., total depth. After acid treatment of 2,000 gal. it pumped 35 bbl. of oil daily.

R. E. Youker's No. 1 Nicol, SE SE NW Section 3-17-4, ½ mile north of the Lost Springs pool in Marion County, found Mississippi lime at 2,297-2,341 ft., total depth. The well pumped 48 bbl. in 8 hours.

Lario Oil & Gas Co.'s No. 1 Morrison, S½ SW NE Section 32-10-17w, Rooks County wildcat, topped Lansing lime at 3,300 ft., Simpson dolomite at 3,634 ft., Arbuckle lime at 3,661 ft., but found no oil and was abandoned at 3,681 ft., total depth.

Skelly Oil Co.'s No. 4 Ratcliff, C SW Section 19-27-10w, Cunningham pool of Kingman County, found gas in the Viola at 3,962-82 ft., total depth. The well cleaned itself and flowed 25,000,000 cu. ft. of gas daily. After acid treatment it gaged 73,000,000 cu. ft. of gas per day.

In the Clover gas area of Cowley County, Joe Aylward's No. 1 Wixon, C NW NW Section 9-31-7, was completed for 400,000 cu. ft. of gas daily. Gas was found at 2,320-45 ft. The hole was drilled to 2,851 ft., but was plugged back to 2,345 ft.

William McKnab's No. 1 Coats, NE cor. Section 18-34-4, Cowley County, found gas sand at 762-95 ft., total depth and was completed for 340,000 cu. ft. of gas per day.

Transwestern Oil Co.'s No. 1 Shumway, N½ NE NE Section 13-20-6w, North Bornholdt area, Rice County, had Mississippi lime at 3,308 ft., total depth at 3,356 ft. and pumped 110 bbl. of oil in 8 hours.

Ellsworth County

Gulf Oil Corp.'s No. 2 Svoboda, SE NE SE Section 8-16-10w, Stoltenberg pool, had Arbuckle lime at 3,309-11 ft., total depth 3,323 ft. and was completed for the maximum allowable potential for the field of 3,000 bbl. daily.

Magnolia Petroleum Co.'s No. 1 Skalicky, W½ SW NW Section 9-16-10w, found Arbuckle lime from 3,293-3,303 ft., total depth, swabbed 63 bbl. of oil per hour, and later swabbed 866 bbl. in 15 hours.

Stanolind Oil Co. and Gulf Oil Corp.'s No. 1 Stoltenberg, W½ NW NW Section 27-16-10w, had Arbuckle from 3,298-3,309 ft., total depth and pumped 213 bbl. of oil in 8 hours.

Skelly Oil Co.'s No. 6 Zink, N½ SW SW Section 32-17-10w, Bloomer area, found pay in the Arbuckle at 3,223-28 ft., total depth. Echometer potential rating was 2,974 bbl. of oil.

Ellis County

Gulf Oil Corp.'s No. 4 Pearl, E½ NW SE Section 13-11-17w, Cress pool, pumped 23 bbl. of oil from Arbuckle lime at 3,369-81 ft., total depth.

Skelly Oil Co.'s No. 1 Riddler, E½ SE NW Section 1-11-18w, Burnett pool, pumped 218 bbl. of oil in 12½ hours from Arbuckle topped at 3,482-84 ft., total depth.

Phillips Petroleum Co.'s No. 7 Hendrick, N½ SW NE Section 13-11-18w, had Arbuckle at 3,369 ft., total depth at 3,374 ft., swabbed 100 bbl. of oil in 4 hours.

New work in Ellis County: Dickey Oil Co.'s No. 3-B Henderson, C W½ NW SW Section 6-11-17w, location. Palmer Oil Co.'s No. 1 Smith, C W½ NE NE Section 14-12-16w, rigging up rotary. Gulf and others' No. 1 Sander, a wildcat test, C N½ SW SE Section 30-13-16w, was waiting for cement to set at 215 ft.

Forest City Basin

ST. JOSEPH, Mo., May 6.—Pawnee Royalty Co.'s No. 1 Bucholz, C NW SW Section 17-1n-16e, third test to be drilled by the Odessa, Tex., company in the Falls City area, Richardson County, Nebraska, gave promise of being a producer. A core taken in Hunton lime at 2,222 ft. had saturation and the well was checking 50 ft. or more higher than No. 1 Boice, discovery well, ½ mile north and ¼ mile west. Operators were waiting for cement to set. Interest was running high as oil men waited for cement plug to be drilled. Rotary tools were to be replaced with cable tools for drilling in. Samples were being cut by the Gulf and Ohio Oil companies.

Operators continued to deepen No. 1 Boice, C NE NE Section 18-1n-16e, and were drilling below 3,500 ft. Some geologists believe Viola lime showings in the well were sufficient to make a producer, but operators elected to drill deeper.

Young & McLaughlin's No. 1 McLeod, C NW SW Section 4-10-20e, Jefferson County, Kansas, had fair oil showings at 1,492 ft. in Mississippi lime and was shut down for orders. Lime was topped at 1,470 ft. It may be acidized. McLaughlin's discovery gas well in the area, in SW NE NW Section 4, found gas in Bartlesville sand. This sand seemed to have lensed out in No. 1 McLeod, as no gas was found. Kerlyn Oil Co.'s No. 1 Wise, C SE SW Section 28-12-20, Douglas County, Kan., was reported to have found gas estimated at 65,000 cu. ft. at an unannounced depth. Phillips Petroleum Co. moved out its slim-hole rotary rig from Section 27-3s-18e, Brown County, Kansas, and was reported planning to replace it with a heavier rig. It had lost circulation, presumably in Silurian formation.

Two new tests in Missouri were reported. Chillicothe Syndicate's No. 1 Linton, C W½ SE Section 15-56-23w, Livingston County, near Chillicothe, has spudded. Frank W. Miller of Shelbina, Mo., has spudded his No. 1 Hadfield, SW NW Section 34-60-7e, in northeastern Missouri, in a relatively shallow area.

Western Kentucky

(Continued from Page 108)

Hancock County, Cloverport district: Roy Beard's No. 1 Duke heirs, 5-bbl. well in Bethel sand, total depth 515 ft.

McLean County, South Livermore district: W. E. Hupp and others' No. 2 J. F. Smith, dry hole through Bethel sand, total depth 1,539 ft.

Ohio County, Adaburg district: Dr. G. W. Hardy's No. 6 Nannie Bean, rigging up. Fordsville district: Guthrie and others' No. 1 V. C. Hastings, dry hole through Jett sand; total depth 380 ft. Olaton district: Ohio Oil Co.'s No. 1 Alvie Oller, rigging up for a Devonian test. Pattyville district: P. P. Murphy's No. 3 Floyd Walker, 15-bbl. well in Jett sand at 246-66 ft., total depth 268 ft. Sunnydale district: Tuttle & Russell's No. 4 C. E. Wimsatt, 20-bbl. well in Pennsylvanian sand at 168-85 ft., total depth 190 ft.

EASTERN KENTUCKY

ASHLAND, Ky., May 6—One small oil well and several gas wells were completed in eastern Kentucky in the past week's reports.

Kentucky-West Virginia Gas Co.'s No. 5264 W. H. May tract, on Long Branch of Jones Fork in Knott County, total depth of 2,638 ft., in shale, produced 103,000 cu. ft. of gas in 48 hours.

Virginian Gas & Oil Co.'s No. V-1281 N. Jane Cassady, on Little Rockcastle in Marion County, total depth 1,464 ft., in Maxon sand, is a 4-bbl. well.

Kentucky-West Virginia deepened No. 5253 George McKinney tract on Deadening Fork of Toler Creek, Floyd County, to 3,133-ft. level, in shale, and it produced 1,100,000 cu. ft. of gas in 72 hours.

Warfield Gas Co.'s No. 4867, T. A. Martin No. 1 land, on Bates Branch in Knott County, made 73,000 cu. ft. of gas, open flow, daily at 2,295 ft. in shale.

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California Field Report

Southeast Coalinga Yields 4 Oil Wells, Wilmington 5

By

L. P. STOCKMAN

LOS ANGELES, Calif., May 6.—A total of 13,555 bbl. of new production was added to the Southeast Coalinga field of Fresno County last week when Standard Oil Co. completed three wells that showed an aggregate initial daily output of 11,295 bbl. and R. S. Lytle finished one well that showed an initial of 2,260 bbl. per day. The latter was No. 48-18-F, in Section 18-20-16, brought in flowing 2,260 bbl. of 31.9-gravity oil and 1,510,000 cu. ft. of gas daily from the Gatchell zone with bottom of the hole at 7,909 ft. Perforations were made at 7,374-7,650 ft. and 7,689-7,887 ft.

Standard's new wells were No. 22-19-F, flowing 3,785 bbl. of oil and 2,830,000 cu. ft. of gas daily; No. 33-19-5, 4,250 bbl. of oil and 3,085,0000 cu. ft. of gas, and No. 42-19-F, flowing 3,260 bbl. of oil and 2,400,000 cu. ft. of gas; No. 22-19-F was bottomed at 8,051 ft. but was plugged back to 7,825 ft., and pipe perforated at 7,601-7,821 ft. No. 33-19-F was bottomed at 7,850 ft. and pipe perforated at 7,850-7,900 ft. Nos. 22-19-F and 42-19-F both found edgewater in the lower part of the Gatchell zone, which was the reason for plugging back.

Current production of leading California fields follows:

	Barrels
Wilmington	82,750
Midway-Sunset	47,350
Long Beach	44,400
Kettleman Hills	43,425
Ventura Avenue	35,500
Huntington Beach	24,700
Santa Fe Springs	25,625
Coalinga	23,500
Montebello	20,750
Santa Maria Valley	15,500

Wilmington

In the Wilmington field of Los Angeles Basin five wells were finished. Pacific Railroad Co. topped the list with three completions, Nos. 131, 133, and 135, the first and last being Ford zone completions and No. 133 a Terminal zone well. No. 131 was brought in flowing 248 bbl. of 30.9-gravity oil per day from 5,297 ft. under a tubing pressure of 150 lb. and a casing pressure of 450 lb. Perforations were made at 3,908 ft., 4,787-4,940 ft., 4,965-5,166 ft., and 5,186-5,292 ft. No. 135 of Union Pacific Railroad Co. flowed 672 bbl. of 29.4-gravity oil per day from a depth of 5,610 ft., with perforations at 5,182-5,308 ft., 5,399-5,467 ft. and 5,557-5,602 ft.

No. 133 flowed 717 bbl. of 29.6-gravity oil per day from the Terminal zone with bottom of the hole at 4,020 ft. Perforations opposite the oil sand were at 3,541-3,633 ft., 3,653-3,730 ft., 3,750-3,823 ft., 3,836-44 ft., 3,865-3,965 ft. and at 3,976-4,012 ft. Wilton Oil Co. and Macmillan Petroleum Corp., each finished Ranger zone wells in the Wilmington field, the former's No. 55-6-F showing an initial of 540 bbl. of 17.6-gravity oil per day from 3,696 ft. and the latter's No. 6 Haynes being brought in flowing 201 bbl. of 13.7-gravity oil cutting 5 per cent daily from 3,548 ft.

Kettleman Hills

Kenda, shortened designation of Kettleman North Dome Association, completed two Eocene wells in the Kettleman North Dome field and both showed normal recovery. Kenda's No. 27-18-J in Section 18-21-17 flowed 1,392 bbl. of 33.6-gravity oil and 14,800,000 cu. ft. of gas from an effective depth of 10,870 ft. and No. 334-18-J in the same section was finished flowing 1,568 bbl. of 30.8-gravity oil and 3,148,000 cu. ft. of gas daily from a depth of 10,905 ft.

Kenda's No. 334-18-J which topped the brown shale at 6,500 ft., top of the Temblor at 7,755 ft., top of the Kreyenhagen at 9,735 ft. and top of the McAdams sand at 10,732 ft., was brought in flowing through a 112/64-in. bean and showed a tubing pressure of 150 lb. and a casing pressure of 250 lb. Both wells were beaned back to the daily allowable for the month of May immediately after completion. Standard Oil Co., which owns in fee slightly less than 50 per cent of the productive acreage in the Kettleman North Dome field, completed No. 57-3-P in Section 3-22-17, flowing 333 bbl. of relatively clean 36.9-gravity oil and a small amount of formation gas on gas lift from the Temblor with bottom of the hole at 8,525 ft. Although operators in many small fields have been complaining about the large amount of drilling under way in the Kettleman North Dome field, there has been no apparent diminution of work and no change downward is anticipated. This new drilling is not affecting the allowable of the field to any great extent, as there has been very little increase in the field's allotment during the past several months.

Cole's Levee—Tupman

Richfield Oil Corp., which has started an aggressive drilling program in the Cole's Levee and Tupman fields involving 50 wells during the remainder of the current year and at least another in the same area during 1941, completed two new wells in this district during the current week. Richfield is developing its extensive acreage on the basis of one well to 40 acres, which is generally regarded as a step in the right direction. Richfield's new wells were No. 74-32-A Kern County Land in Section 32-30-25, completed flowing 2,162 bbl. of 31.9-gravity oil and 1,800 cu. ft. of gas per day through two 1½-in. beans from 9,010 ft. and No. 78-29-A Kern County Land in Section 29-30-25, flowing 1,090 bbl. of 31.6-gravity oil and 1,650,000 cu. ft. of gas per day through two 1½-in. beans from a depth of 8,920 ft.

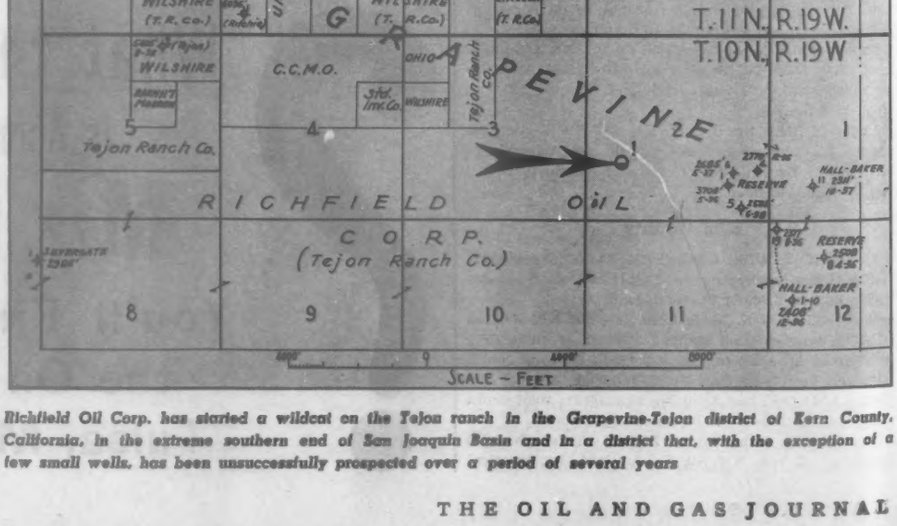
In conformity with its extensive development program involving the Cole's Levee and Tupman fields, Richfield Oil Corp. is running nine strings of tools and has rigs up or location staked for nine additional wells. Practically all of the work under way in this field is being done by Richfield, as Ohio Oil Co. and Standard Oil Co. have reduced work to one well each, and Union Oil Co. has suspended work altogether.

Rio Bravo

Superior Oil Co. set a new drilling record for the Rio Bravo field this week by completing No. 2 Weber in Section 27-28-25, flowing 1,588 bbl. of 38.5-gravity oil and 2,010,000 cu. ft. of gas per day from the Rio Bravo zone in 37 days. This new well, which was brought in flowing through a 32/64-in. bean, was finished at 11,450 ft. and has a 7⅝-in. water string cemented at 11,199 ft. The productive Rio Bravo zone was cored at 11,198 ft. The fast drilling record established by Superior Oil Co. in No. 2 Weber is attributed to the fact that the well contains the largest equipment used in the state and also because no mechanical trouble developed from top to bottom. Completion of this well leaves Superior Oil Co. with only one incompleted well, No. 3 Burner in Section 27-28-25, under way. Union Oil Co. is drilling two wells on the discovery property in Section 34-28-25, and is rigging up another, No. 63-34 Kern County Land, in the same section, preparatory to an early spud. Superior Oil Co., which has pioneered extension work to the northwest is expected to resume work in that area again soon, and this work may make it necessary for Union Oil Co. to drill an offset.

Ten Section

Shell Oil Co., Inc., which controls all of the potentially productive acreage in the Ten Section field of Kern County in the San Joaquin Basin, completed two wells. No. 38-20-B Kern County Land in Section 30-30-26, was completed flowing 3,309 bbl. of 32.5-gravity oil



Richfield Oil Corp. has started a wildcat on the Tejon ranch in the Grapevine-Tejon district of Kern County, California, in the extreme southern end of San Joaquin Basin and in a district that, with the exception of a few small wells, has been unsuccessfully prospected over a period of several years

and 2,455,000 cu. ft. of gas per day from the Stevens sand with bottom of the hole at 8,220 ft. This well is in the southwest end of the field. No. 76-29-A Kern County Land in Section 29-30-26, was completed flowing 3,500 bbl. of 32.6-gravity oil and 2,500,000 cu. ft. of gas per day from the Stevens sand with bottom of the hole at 8,240 ft. This well appears to be picking up, and production may reach 4,000 bbl. per day. Top of the pay was encountered at 7,875 ft., which gives the well a total of 365 ft. of oil sand from which to produce. Shell Oil Co., Inc., due to the large flush production shown by the Stevens sand in the Ten Section field, has not yet made any attempt to determine the existence or absence of the Vedder and Rio Bravo sands which should be found around 11,000 ft. These zones are being held back until the upper zones have become depleted, as the company does not require any additional production. The Ten Section field is expected to contain a deeper productive horizon which will probably conform with the lower productive sands found in the Greeley field. The Canal field, which adjoins Ten Section field on the northwest, should also contain a deeper productive zone as should also the Strand field located nearby.

Wasco

Continental Oil Co. completed another well in the Wasco field of Kern County, but will hang up tools in this field for a short time. Continental's new well is No. 1 Meyer in Section 7-27-24, flowing 2,960 bbl. of 36.9-gravity oil and 960,000 cu. ft. of gas per day from the Wasco zone with bottom of the hole at 13,157 ft. Top of the pay was cored at 13,086 ft. and on a recent water-shutoff test the top of the liner tested wet. A recement job corrected the mechanical trouble and the well was brought in under control after the blank liner had been perforated. Pacific Western Oil Co. has just completed derrick for No. 1 Meyer, which will be drilled in Section 7-27-24, adjacent to No. 1 Meyer of Continental Oil Co., and an early spud is anticipated. Under the newly agreed pact between George F. Getty, Inc., Pacific Western Oil Co. and Tide Water Associated Oil Co. signed in New York on May 1, the last-named company will take over the drilling of this and other wells in proved fields existing as of that date. Standard Oil Co. concluded drilling operations on No. 4 Mushrush in Section 7-27-24, at 13,135 ft. Standard has completed derrick for No. 5 Mushrush.

Montebello

Only one well was completed in the Montebello field of Los Angeles Basin. It was No. 39 Monterey of J. E. Mabee Co., which was brought in flowing 595 bbl. of 36.6-gravity oil and 1,200,000 cu. ft. of gas per day through an 18/64-in. bean from La Merced zone with bottom of the hole at 7,740 ft. This well was carried down to 7,790 ft., but was plugged back because of bottom water in the base of La Merced zone. J. E. Mabee Co.'s No. 43 Monterey is standing cemented on top of the 8-3 zone at 7,805 ft. with bottom of the hole in the pay at 7,888 ft., and should be tanking oil within a few days. Seven other wells are either in or on top of the new 8-3 zone, and the first group of completions from this sand should begin making their appearance within another week or 10 days.

Los Angeles Basin

Shell Oil Co., Inc., completed a well in the Dominguez field of Los Angeles Basin, No. 103 Reyes, flowing 695 bbl. of 28.8-gravity oil from the "shallow" zone with bottom of the hole at 4,250 ft. This well is making 1,600,000 cu. ft. of net formation gas along with the oil. Seaport Oil Corp.'s No. 1 Dasteel, in the extreme southwestern end of the Dominguez field, which is being drilled by Gibralter Drilling Co., drilled into the top of the pay late in the week at 7,255 ft., but it is not yet known whether this correlates with the top of the seventh or eighth Callender zones. In the Long Beach field Unity Oil Co. completed No. 1 Donna, pumping 158 bbl. of 22.2-gravity oil per day from 3,649 ft.

Thomas Kelly & Sons, Inc., secured a good well in the southern end of the Rosecrans field when No. 2 McMillen was completed flowing 490 bbl. of 32.5-gravity oil and 600,000 cu. ft. of gas per day through an 18/64-in. bean from the O'Dea zone at 7,761 ft. This is the best well completed in this area in a long time, and may have a tendency to stimulate additional development.

In the Torrance field Chanslor-Canfield Midway Oil Co. recompleted No. 47 Torrance flowing 260 bbl. of 27.2-gravity oil and 58,000 cu. ft. of gas per day through a 32/64-in. bean after deepening from 3,725 to 4,866 ft.

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	April 28		April 21			
Intercoastal-domestic—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	64,997	9,285	.....	.....	144,217	185,791
Fuel oil	.....	.....	.....	.....	152,798	657,526
Diesel and gas oil	.....	.....	.....	.....	.....	163,501
Gasoline	.....	.....	.....	.....	751,841	761,324
Kerosene	.....	.....	.....	.....	.....	122,200
Foreign exports—						
Crude oil	155,011	22,144	244,403	34,915	4,080,821	4,761,180
Fuel oil	125,842	17,977	76,136	10,877	2,532,412	2,549,932
Diesel and gas oil	125,052	17,865	143,811	20,544	2,202,937	1,912,699
Gasoline	89,527	12,790	120,886	17,269	1,694,607	2,794,998
Kerosene	.....	.....	7,094	1,013	361,721	584,941
Lubricants	.....	.....	37,100	5,300	77,798	42,034
Coastwise-domestic—						
Crude oil	150,601	21,514	216,474	30,925	3,329,983	4,141,704
Fuel oil	335,342	47,906	352,477	50,354	5,247,538	3,217,780
Diesel and gas oil	20,597	2,942	102,715	14,674	1,041,279	852,325
Gasoline	442,068	63,153	394,037	56,291	5,329,196	4,537,706
Kerosene	22,511	3,216	14,632	2,090	187,555	149,138

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
Fuel oil	.....	.....	.....	.....	67,840	61,281
Diesel and gas oil	.....	.....	.....	.....	281,260	69,550
Asphalt	.....	.....	101,068	14,438	174,268	140,426
Lubricants	3,545	506	.....	.....	11,151	8,183
Foreign exports—						
Crude oil	90,847	12,978	82,439	11,777	1,393,077	1,675,974
Fuel oil	84,709	12,101	93,637	13,377	531,975	885,259
Diesel and gas oil	97,742	13,963	62,715	8,959	958,491	705,545
Gasoline	87,388	12,484	109,843	15,692	882,154	1,100,126
Kerosene	19,009	2,716	15,972	2,282	195,531	303,112
Lubricants	.....	.....	58,226	8,318	153,691	168,709
Other finished oil	.....	.....	256	37	506	352
Coastwise-domestic—						
Fuel oil	60,142	8,592	191,812	27,402	2,006,670	2,027,955
Diesel and gas oil	18,361	2,623	35,141	5,020	380,866	325,234
Gasoline	76,763	10,966	49,915	7,131	2,276,417	2,135,556
Kerosene	5,490	784	15,603	2,229	201,531	232,426

No. 1 Westmore Land Co. of El Rey Oil Co., a wildcat, in the Athens district of Los Angeles Basin, has taken on dubious aspect due to the well's failure to respond to swabbing operations of several days' duration. This wildcat was drilled down to 9,063 ft., but has been plugged back to 9,000 ft. It shows a little kick from time to time, but does not show any sustained flow.

Huntington Beach

In the Huntington Beach field of Orange County in Los Angeles Basin, Clear View Oil Co. completed No. 1 Williams, pumping 81 bbl. of 17.7-gravity oil cutting 7 per cent daily from a depth of 4,286 ft. This well is in Section 36-5-11. Drilling operations are getting under way again in the Huntington Beach field, due primarily to increased tideland development. Recently the state Lands Commission awarded leases to Surf Associates, Inc., and the Termo Co. covering three tideland locations, each in the Huntington Beach, after closed bidding. The two leases call for payment of royalties on a sliding scale with a minimum royalty of 12½ per cent. A flat rate of 15 per cent applies on all gas or natural-gasoline production. Comparison of the contracts on

(Continued on Page 128)

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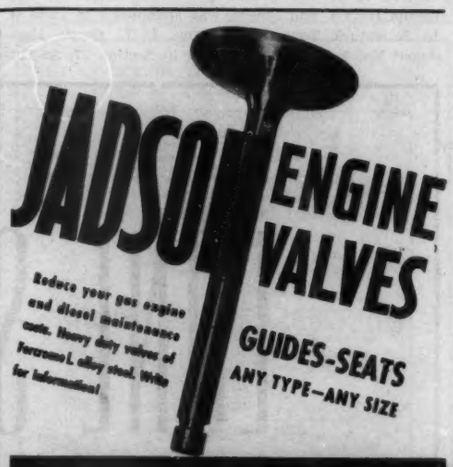
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Tulsa, May 18-25
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Michigan Given Twelve New Producing Wells; Eight Dry

By OTTO C. PRESSPRICH

SAGINAW, Mich., May 6.—A dozen new wells, their initial production ranging from a high of 1,200 bbl. naturally to 75 bbl. after an acid treatment, increased Michigan's potential last week by more than 3,500 bbl. a day. Development also included completion of the first gas well in several weeks, the production serving to extend two fields. Seven oil tests, a few of them wildcat ventures, and one gas test, were abandoned as failures.

Despite the rather slow pace, compared with the closing months of 1939, Michigan development continues to run well ahead of the comparable period for a year ago. In the past week the state Conservation Department issued 29 permits for new wells, bringing the total for the year to 391 and crude output for the first 4 months of 1940 was approximately 4,750,000 bbl., about 15 per cent higher than for the initial 4 months of 1939. New development is proceeding at a rate showing a gain of approximately 10 per cent.

Completion activity was greatest last week in Allegan County, and although only two of the seven finished tests brought production, the increasingly important Heath Township region was responsible for more than a third of the new daily potential as Fletcher & Leman's No. 1 Van Sweden, in Section 4-3n-14w, was completed at 1,459 ft. in Traverse limestone, for an initial flow at the rate of 1,200 bbl. in 24 hours. The other Allegan producer was Charles W. Cook's No. 3 Hazekamp, in Section 34, Overisel Township, 4n-14w. After it was acidized it produced 75 bbl. a day.

In the Allegan district No. 1 Federal Land Bank, in Section 5, of Lee Township, 1n-15w, drilled by McKenna Oil Co. and others, was abandoned at 1,293 ft. In Saugatuck Township, 3n-16w, L. E. Quade abandoned No. 1 Scarlett, a wildcat in Section 27, in Traverse lime at 1,391 ft. Hugh Heinig's No. 1 Mixlushek, in Section 9, of Wayland Township, 3n-11w, was unsuccessful, drilling halting at a depth of 1,139 ft. Bell & Marks, Inc., registered a failure in Section 24 of Hopkins Township, 3n-12w, abandoning No. 1 Buskirk at 635 ft., and Charles W. Cook's No. 1 Nakken, in Section 33 of Overisel, was dry at 847 ft.

The four Kent County producers rated from 81 to 750 bbl. a day, the best test being Rex Oil & Gas Co.'s No. 3 Central Land Co., in Section 3 of Wyoming Township, 6n-12w, completed at 1,760 ft. Certain-Teed Products Corp.'s Nos. 15 and 16, in Section 33 of Walker Township, 7n-12w, were rated at 275 bbl. and 125 bbl., respectively, both after acid treatment. Also in Section 33, D. E. Foster completed No. 3 Nardin for an after-acid initial of 81 bbl. a day. There were no dry holes recorded and in adjoining Ottawa County George Kernodle's test rated 100 bbl. a day after acid as his No. 1 Bursma in Section 23 of Tallmadge Township, 7n-13w, was completed at 1,886 ft.

The situation in Van Buren County brightened somewhat as two producers were recorded. Gratiot Oil & Gas Operations Co.'s No. 1 Drake, in Section 21, Bangor Township, 2s-16w, rated 120 bbl. a day naturally, and in Section 14 of Bloomingdale Township, 1s-14w C. C. Goff's No. 1-A Maier was good for 100 bbl. after an acid treatment. Depth of the Drake well was 998 ft., and of the Maier well 1,284 ft.

Jackson County registered a wildcat failure when A. G. Morency abandoned No. 1 Brown in Section 2 of Hanover Township, 4s-2w, at 1,557 ft.

Central Michigan development included three producers and one dry hole. The best well was Gulf Refining Co.'s No. 3 Burch, in Section 17 of Isabella County's Wise Township, 16n-3w, rating 388 bbl. a day from 3,747 ft. after an acid treatment. Cities Service Oil Co.'s No. 2 Tice, in Section 29 of Wise Township, was good for 159 bbl., after acid, from 3,707 ft. Cities Service's No. 3 Tice was drilling around 3,600 ft., and J. V. Wicklund Development Co.'s No. 1 Carpenter, in Section 17, was at the top of the Dundee. Chartiers Oil Co.'s No. 5 Currie, in Section 5, of Vernon Township, 16n-4w, was dry and abandoned at 3,968 ft. The other producer was in Clare County where S. J. Higelmire, trustee's, No. 1 William was good for 145 bbl. naturally from 3,864 ft. in Section 32 of Redding Township, 19n-6w.

Belvidere Oil Co.'s No. 1, in Section 28 of Home Township, 12n-6w, Montcalm County, extended the Edmore gas field one location. Daily open flow was reported as 7,560,000 cu. ft. from a depth of 1,323 ft., in the Michigan stray sand. The Amble field at Howard City was extended westward as Taggart Brothers, Inc.'s No. 15 Long, in Section 1 of Reynolds Township, 12n-10w, had open-flow potential of 5,170,000 cu. ft. of gas from a depth of 1,119 ft. In the newer Richland Township field, 12n-5w, Belvidere Oil Co.'s No. 1 Evans, in Section 21, was a failure at 1,253 ft.

Four wildcat projects are in the list of 29 new permits for 15 townships in 9 counties. Eight of the locations are in Ottawa County, Holland Township getting two, Tallmadge four, Zeeland one, and Crocker one. The Kent County sector got two in Walker Township, and one in Wyoming Township. Monterey and Salem townships of Allegan, and Bangor of Van Buren each received one permit.

In the far southwestern part of the state a test is scheduled for Berrien Township, Berrien County. Two wildcat tests are listed for Lenawee County, one in Section 36 of Macon Township, another in Section 8 of Clinton Township, to be drilled by Voorhees Drilling Co. Central Michigan development lists two offset tests for the Wise pool, planned by Cities Service Oil Co., a Pure Oil venture, in Section 3 of Jasper Township, Midland County, and the Stork Oil Co. test in Section 3 of Bentley Township, Gladwin County.

Acreage available for oil and gas exploration was increased as the state Conservation Department offered at auction 20,000 acres of wildcat territory for leasing in 10 northern counties, a third of the acreage being in Gladwin County.

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West Texas Fields

(Continued from Page 113)

Corp.'s No. 2-5-52 Mallett Land & Cattle Co., 5,008-32 ft., 323 bbl.

Loving County

Mason field: Michigan Oil & Gas Co.'s No. 9 Kyle, temporarily abandoned at 4,042 ft.

Wheat field: H. W. Martin's No. 5 Wheat-Ramsey, 4,209-4,252 ft., 172 bbl.

Pecos County

Yates field: Ohio Oil Co.'s No. G-1-8 Yates, 420-457 ft., 15 bbl.

White & Baker field: R. L. Walker's No. 1 White & Baker, 1,989-2,016 ft., 19 bbl.

Reeves County

A wildcat, T. A. T. Oil Co.'s No. 1 U. G. Orendorff, Section 10, Block 59, P.S.L. Survey, dry and abandoned at total depth of 1,901 ft.

Scurry County

Sharon field: Western & Southern Oil Co.'s No. 2 Sorrell, 1,740-1,811 ft., 81 bbl. M. Brownfield's No. 1 Wade, 2,250-2,490 ft., 48 bbl.

Terry County

A wildcat, Tide Water Associated Oil Co.'s No. 1 Oran Buckner, SW Section 3, Block 37-C, P.S.L. Survey, top anhydrite 2,140 ft., top Yates sand 3,030 ft., top first brown lime 3,997 ft., top solid lime 4,450 ft., dry and abandoned at total depth of 5,123 ft.

Ward County

Estes field: Gulf Oil Corp.'s No. 131 O'Brien, 2,590-2,668 ft., 213 bbl. W. N. Agey's No. 1 Sloan-Shell, 2,630-2,895 ft., 30 bbl. Sinclair Prairie Oil Co.'s No. 25 Archenhold, 2,543-3,020 ft., 330 bbl.

Winkler County

Keystone field: M. J. Bashara & Son's No. 4 fee, 3,100-3,248 ft., 150 bbl.

Yoakum County

Wasson field: Anderson-Prichard Oil Corp.'s No. 5-805 Spearman-Willard, 4,950-5,157 ft., 1,739 bbl. Argo Oil Corp.'s No. 2-C Comer, 4,920-5,165 ft., 1,579 bbl. Continental Oil Co.'s No. 4-868 Kendrick, 4,990-5,120 ft., 1,474 bbl. Honolulu Oil Corp.'s No. 4-890 Hovencamp, 4,875-5,045 ft., 834 bbl. Humble Oil & Refining Co.'s No. 4 Bennett, 4,984-5,220 ft., 1,323 bbl. Magnolia Petroleum Co.'s No. 13 Mahoney, 4,975-5,175 ft., 1,136 bbl. J. W. Murchison's No. 2-B Anderson, 5,030-5,230 ft., 567 bbl. Oil Development Co.'s No. 2-765 fee, 4,880-5,215 ft., 487 bbl. Oil Development Co.'s No. 13-803 fee, 4,880-5,215 ft., 1,169 bbl. Olson Oil Co.'s No. 7 Oil Development Co., 4,870-5,180 ft., 1,370 bbl. Olson Oil Co.'s No. 8 Oil Development Co., 4,800-5,205 ft., 1,048 bbl. Shell Oil Co., Inc.'s No. 12-A Baumgart, 4,880-5,194 ft., 1,372 bbl. Shell Oil Co., Inc.'s No. 6-E Baumgart, 4,830-5,193 ft., 1,361 bbl.

TEXAS PANHANDLE COMPLETIONS

(24-hour gages)

OIL COMPLETIONS

Carson County

Texas Co.'s No. 24 Boney, 3,185-3,245 ft., 330 bbl.

Gray County

Cities Service Oil Co.'s No. 7 Walberg, 2,995-3,035 ft., 129 bbl.

Hutchinson County

McIlroy & Hermann Brothers' No. 13 Halle, 2,975-3,024 ft., 602 bbl. Phillips Petroleum Co.'s No. 25 Perkins, 3,000-45 ft., 148 bbl. Shell Oil Co., Inc.'s No. 2-B Harvey, 2,975-3,024 ft., 415 bbl. Stanolind Oil & Gas Co.'s No. 11-B Watkins, 2,975-3,039 ft., 505 bbl.

GAS COMPLETIONS

Carson County

Huber Corp.'s No. 12-B Burnett, 9,802,000 cu. ft. of gas from granite wash pay. Northern Natural Gas Co.'s No. 1 Wells-Smoot, 16,428,000 cu. ft. of gas from granite wash.

Moore County

Phillips Petroleum Co.'s No. 1 Champ, 5,479,000 cu. ft. gas from granite wash.

North Texas Fields

(Continued from Page 110)

NORTH TEXAS COMPLETIONS

Archer County

Cato Oil Co.'s No. 6 O. T. Anderson, 1,062-75 ft., 425 bbl. Cato Oil Co.'s No. 7 O. T. Anderson, 1,070-80 ft., 263 bbl. Cato Oil Co.'s No. 9 O. T. Anderson, 1,061-81 ft., 251 bbl. J. A. Chapman's No. 2 Dr. J. A. Little A, 4,335-4,410 ft., 1,560 bbl. J. A. Chapman's No. 1 Dr. J. A. Little B, 4,325-75 ft., 1,630 bbl. Chapman & McFarlin's No. 5 L. F. Wilson E, 3,719-67 ft., 1,003 bbl. C. B. Christie and others' No. 2 J. H. White, 4,357-4,415 ft., 689 bbl. Cities Service Oil Co.'s No. 29 L. F. Wilson C, 4,357-4,406 ft., 954 bbl. Cochran & Cain's No. 2 Dr. J. A. Little B, 4,353-4,405 ft., 1,056 bbl. Continental Oil Co.'s No. 13 L. F. Wilson "McCrory," 4,313-79 ft., 1,048 bbl. Cox & Hamon's No. 2 J. A. Little (big), 4,344-4,405 ft., 1,368 bbl. Deep Oil Development Co. and others' No. 6 Dr. J. A. Little, 4,320-70 ft., 1,347 bbl. Helmerich & Payne and Blackwell's No. 12 L. F. Wilson, 4,347-71 ft., 1,225 bbl. Helmerich & Payne and Madza's No. 3 W. T. Finley, 4,271-4,304 ft., 360 bbl. Bert L. Ligon and others' No. 4 Dr. J. A. Little B, 4,338-4,408 ft., 1,090 bbl. Bert L. Ligon and others' No. 5 Dr. J. A. Little B, 1,310-27 ft., 50 bbl. Peterson & DeMontel's No. 1 J. Schildkneckt, 4,257-90 ft., 1,150 bbl. Peterson & McCarty's No. 33 L. F. Wilson B, 3,732-55 ft., 1,299 bbl. Cable Oil Co.'s No. 11 Charles H. Crawley, 980-84 ft., 8 bbl. King Oil Co.'s No. 15 fee, 1,445 ft., dry. J. T. Miller's No. 1 L. F. Wilson, 1,550 ft., dry. Panhandle Refining Co.'s No. 7 F. C. Green C, 1,133-41 ft., 86 bbl. Shell Oil Co.'s No. 7 E. Colgan, 1,449 ft., 25 bbl.

Cooke County

Cox & Hamon's No. 13 K. Neu B, 4,880-4,902 ft., 878 bbl. Magnolia Petroleum Co.'s No. 4 S. L. Ramsey estate, 4,793-4,843 ft., 630 bbl. Sinclair Prairie's No. 11 P. McGeorge, 4,924-97 ft., 602 bbl. Lausen and others' No. 1 C. J. Fette, 1,113-22 ft., 150 bbl. Richards and others' No. 1 S. A. Lynn, abandoned location. Shaw Oil Co.'s No. 3 H. W. Stark, 1,112-22 ft., 160 bbl. Shaw Oil Co.'s No. 4 H. W. Stark, 1,132-44 ft., 158 bbl.

Clay County

E. N. Brock's No. 4 W. F. George, 450 ft., dry. L. T. Burns' No. 1 H. S. Wolf, 2,444 ft., dry. Continental Oil Co.'s No. 1 J. D. Avis, 5,365-89 ft., 356 bbl. Gorman & Norwood's No. 2 C. T. Taylor A, 1,130 ft., dry. L. H. Holiday's No. 1 J. D. Fleming, 1,373 ft., dry.

Montague County

Continental Oil Co.'s No. 1 J. W. Rowland A, 756-988 ft., 25 bbl. Conner and others' No. 1 H. Gentry, abandoned location. W. T. Payne's No. 1 T. M. Baker, 5,325-30 ft., 1,635 bbl. United Producers Co.'s No. 1 Mrs. J. Rex, 3,994 ft., dry. Oppman and others' No. 1 P. J. Blackburn, abandoned location.

Wichita County

B. C. E. Development Co.'s No. 1 F. P. Warren, 1,452-80 ft., 30 bbl. Bell Oil & Gas Co.'s No. 11 M. J. and J. B. Evans, 1,431 ft., dry. Roy I. Carter's No. 1 J. N. George, 1,630 ft., dry. Cochran & Cain's No. 1 D. R. Preston B, 3,937-88 ft., 416 bbl. Consolidated Oil Co.'s No. 12 J. James, 3,947-4,000 ft., 2,106 bbl. Dalport Oil & Gas Co.'s No. 3 Munger Brothers, 3,799-3,875 ft., 1,157 bbl. C. O. Davis' No. 2 O. M. Jones, 4,000-55 ft., 610 bbl. Hammon and others' No. 16 Fassett, 3,928-4,015 ft., 521 bbl. Kimmell Lee & Co.'s No. 1 J. F. and Ora Love, 3,845-4,056 ft., 32 bbl. W. B. Omohundro's No. 4 O. M. Jones, 3,896-4,074 ft., 600 bbl. Southport Petroleum Corp.'s Nos. 5, 8, 16, 17, 18 State of Texas, abandoned location. Tide Water Associated Oil Co. and others' No. 18 W. P. Ferguson, 3,755-3,862 ft., 847 bbl. Tide Water Associated Oil Co. and others' No. 20 Charles Pettit, 3,700-3,823 ft., 875 bbl.

Young County

Benson & O'Rourke's No. 4 Mary E. Harlin, 2,719-3,790 ft., 200 bbl. W. F. Collins' No. 1 F. T. Harmon, 605 ft., dry. A. R. Kendricks' No. 1 J. R. Jackson, 1,253 ft., dry. R. W. Hunt's No. 7 H. M. Gass, abandoned location. R. J. Watson's No. 4 B. A. Larimore, 658-700 ft., 2 bbl.

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Tulsa, May 18-25

(Outdoor Space—On Texas Drive)

Rocky Mountain Area

By

T. R. INGRAM

Shannon Sand in Cole Creek, Wyo., Yields 400-Bbl. Well

DENVER, Colo., May 8.—The northern Rocky Mountain area had few developments outside of the routine. The most important was the General Petroleum Corp.'s No. 1-21-G, on the Cole Creek structure, Wyoming, which swabbed 20 bbl. an hour from the Shannon sand through perforated casing. This is the first test of showing in that sand which had some saturation in all three wells drilled on the structure. Cut Bank had one completion, a 190-bbl. well in the Glacier Production Co.'s No. 5 Miller. Kevin-Sunburst had one completion, a 10-bbl. well.

New operations included a deep test in the old Torchlight field in Wyoming by McDonald & Curtis, a well on the east side of Salt Creek in Lewis Gebhart's No. 1 Government; two locations in Lance Creek, both inside wells; and one in Kevin-Sunburst.

NEW MEXICO

The greatest weekly upturn in drilling activity in many months was noted in Southeast New Mexico during the past week as 27 new locations were made in Lea and Eddy counties. Three of the 27 locations were in wildcat territory in western Eddy County.

In the northwestern part of Eddy County, in SE SE Section 24-18-23, May Weathers staked location for No. 1 Flood. About 20 miles south and slightly west of this wildcat is another location staked by Jack Harris for No. 1 Josey, SW SE Section 19-20-23. It is about 6 miles from the western line of Eddy County. The county's third new wildcat will be Martin Yates, Jr.'s No. 1 McCall, SW SW Section 24-18-26. It is on the northwestern shore of Lake McMillan.

In the High Lonesome field of northern Eddy County and 3½ miles southeast of the discovery well, Schumacker and others staked No. 1 Levers, NE NE Section 33-16-29. It is about 3 miles north of the discovery well in the Root area and about 2 miles east of a large gas well completed several months ago to extend the field 3 miles to the south.

Eddy County's remaining locations were four in the Jackson field and three in the Loco Hills field. Lea County's locations were six in the Vacuum field, two each in the South Eunice and Penrose fields and one each in the Monument, Hardy, Maljamar, South Maljamar, and Skelly fields.

Eddy County

May Weathers' No. 1 Flood, SE SE Sec. 24-18-23. Loc.
M. Yates, Jr.'s No. 1 McCall, SW SW Sec. 24-18-26. Loc.
Jack Harris' No. 1 Josey, SW SE Sec. 19-20-23. Loc.
Schumacker's No. 1 Levers, NE NE Sec. 33-16-29. Loc.
J. B. Mulcock's No. 1 Etz, 660 ft. from S and W lines, Sec. 25-16-30. Spdg.
Everts' No. 1 Greer, SE cor. Sec. 31-16-31. P.B. 3,690 ft.; swbd. 5 B.O.P.D. for 7 days; tstg.
Everts & Moran's No. 1 Ranuz, NE NW Sec. 18-23-26. T.D. 375 ft.; S.D.
J. B. Cowden's No. 1 State, SW SE Sec. 3-17-29, between Root field and High Lonesome field. M.I.M.
G. A. Grober's No. 1 Wright, 1,080 ft. from N and W lines, Sec. 25-18-25. Tstg. S.O.&G. 1,382 ft.; est. 10 B.O.P.D.; prep. D.D. 1,833 ft.
G. M. Cone's No. 1 Hare, NW NW NE Sec. 14-16-28, 3 mi. W of High Lonesome field. Loc.
Artesia Drlg. Co.'s No. 1 Hoffman, SE SE SE Sec. 14-17-24. S.D.R. 975 ft.; est. 1,250,000 cu. ft. gas at 938 ft.; drlg.
L. E. Elliott's No. 1 Elliott, SE SE SE Sec. 24-17-29. S.S.O. 3,255-75 ft.; S.D.O. 3,482 ft.; made 1 B.O. and 4 B.W. in 24 hrs.; drlg. 3,705 ft.
Anderson's No. 1 Neeson, 330 ft. from W and 2,310 ft. from N lines, Sec. 4-16-30. Prep. D.D. 2,650 ft.
Clark & Cooper's No. 1 Gates, 1,980 ft. S and E lines, Sec. 20-16-27. S.D.O. 2,500 ft.
Frederick's No. 1 Reed, 1,980 ft. from S and W lines, Sec. 28-24-36. O.W.D.D.; est. 1,500,000 cu. ft. gas at 2,300 ft.; U.R. 2,665 ft.; T.D. 2,893 ft.
Wilder's No. 1 Young, 1,650 ft. from N and W lines, Sec. 23-16-29. S.G. 1,805 ft.; S.D.O. 3,095 ft.
Sam Montgomery's No. 1 Kaltenback, 330 ft. from N and W lines, Sec. 24-16-27. Fsg. tools 2,243 ft.
Thomas & Bowers' No. 1 H. W. Etz, 2,310 ft. from N and 330 ft. from W lines, Sec. 13-16-30. Drlg. 3,090 ft.

Dona Ana County

Picacho O. & G. Co.'s No. 12 Armstrong, Sec. 15-23s-1w. S.D.O. 2,620 ft.
Slack & Mahres' No. 1 Simmons, Sec. 35-22s-5e. T.D. 2,785 ft.; S.D.O.

Chaves County

Farrar-Jones-Cunningham's No. 1 Samples, 330 ft. from S and E lines, Sec. 1-7-27. S.D.R. 98 ft.

Luna County

O. D. Berry's No. 2 Berry, Sec. 33-22-10. S.D.R. 145 ft.

Lea County

J. D. Barefield's No. 2 Stroup, 1,980 ft. from N and E lines, Sec. 12-18-32. Drlg. 3,578 ft.
Stogner & Weiner's No. 1 State, SE SE Sec. 30-12-32. U.R. at 960 ft.; T.D. 970 ft.
Stanley & Weiner's No. 1 Saunders, NE NE Sec. 20-21-38. Building roads.

Otero County

Ernest's No. 1 Ernest, Sec. 20-25-7. Straightening hole 2,993 ft.
Otero Oil Co.'s No. 1 State, SE NW Sec. 5-22-10. S.D.O. 825 ft.

Socorro County

Joiner Oil Corp.'s No. 1 Belen grant, 2,310 ft. N and W lines, Sec. 16-3-1. S.D. 600 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

Eddy County

In the Jackson field Premier Petroleum Co.'s No. 5-F Beeson, SW NE Section 31-17-30, 2,831-51 ft., 196 bbl. daily after shot. Republic Petroleum Co.'s No. 8 Russell, SW NE Section 18-17-31, 3,490-97 ft., 140 bbl. in 13 hours through open tubing, naturally.

In the Loco Hills field, Sallee & Yates' No. 2-B Ballard, SW NW Section 1-18-29, 2,696-2,717 ft., 270 bbl. in 6 hours through open tubing after shot. Bassett & Birney's No. 5-B State, NW NW Section 2-18-29, 2,734-55 ft., 150 bbl. in 6 hours through open tubing after shot. Dixon & Yates' No. 2-A Sanders, NW NE Section 12-18-29, 2,714-50 ft., 115 bbl. in 2 hours through open tubing after shot.

Lea County

In the Maljamar field R. W. Rair's No. 4-B Baish, SW SE Section 22-17-32, 3,947-80 ft., 500 bbl. daily through open tubing after shot.

In the Vacuum field Magnolia Petroleum Co.'s No. 59 State-Bridges, NW SW Section 13-17-34, 4,580-4,670 ft., 134 bbl. daily. Ohio Oil Co.'s No. 6 State-Warn, NE SW Section 6-18-35, 4,500-4,690 ft., 180 bbl. in 3 hours through open tubing, naturally.

In South Eunice field Ohio Oil Co.'s No. 17 State-McDonald, SE NE Section 13-22-36, 3,707-60 ft., 131 bbl. in 3 hours through open tubing, naturally. In the Penrose field Skelly Oil Co.'s No. 3-B A. B. Baker, NW SW Section 10-22-37, 3,645-3,735 ft., 92 bbl. daily through 14/60-in. choke after shot.

In the Skelly field Skelly Oil Co.'s No. 9 H. O. Sims, NW SW Section 34-22-37, 3,582-3,670 ft., 126 bbl. daily through open tubing, naturally.

In the Mattix field C. B. King's No. 1 Toby, NW SW Section 7-24-37, 3,446-3,640 ft., 75 bbl. in 10 hours through open tubing after shot.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc.'s No. 2 North Albuquerque, NE SE NW Sec. 19-11n-4e. S.D. 4,710 ft.
Norins Realty Co., Inc.'s No. 2 Pajarito, Sec. 22-9n-1e. S.D. 2,000 ft.

McKinley County

Petroleum Products Corp.'s No. 7 Hospah, C SW SW Sec. 36-18n-8w. Spd. to 50 ft.; S.D. acct. weather.

Valencia County

C. A. Grober et al's No. 1 Fuqua, NE NE Sec. 19-5n-3e. T.D. 3,850 ft.; prep. to run 7-in.

Socorro County

Joiner Oil Corp.'s No. 1 Belen Grant, SE NW Sec. 10-3n-1e. Drlg. 850 ft.

San Juan County

Continental Oil Co.'s No. 105 Rattlesnake, NE SW SW Sec. 12-29n-19w. Drlg. 175 ft.; 8⅝-in. at 25 ft.
Claude Carroll's No. 1 Cornell, C SE NE Sec. 11-29n-12w. Drlg. 550 ft.
Kutz Deep Test, Inc.'s No. 1 Govt., C NW NW Sec. 28-28n-10w. T.D. 950 ft.; landed 12½-in. on bttm.
Continental Oil Co.'s No. 100 Rattlesnake, SE NW NE Sec. 2-29n-19w. S.D.O. 7,407 ft.

COLORADO

Adams County

Derby Dome O. & G. Co.'s No. 2 Baxter, C SE SW Sec. 2-3s-66w. Drlg. 2,520 ft.

Custer County

Henry Donnelly's No. 1 Hodges, SE NE Sec. 26-21s-69w. Dpnd. to 1,662 ft.; S.D. for csg.

El Paso County

F. F. Hintze et al's No. 1 State, CSL SE SE Sec. 16-11s-66w. Drlg. gr. sh. 1,100 ft.; U.R. and lowering 8¼-in.

Fremont County

John Lipps' No. 1 fee, C.T. in south Florence on farmout from Continental Oil Co., C SW SW Sec. 11-19s-70w. Loc.

Huerfano County

Ira E. Miller et al's No. 1 Hamilton, SE SE NW Sec. 20-29s-67w. T.D. 1,365 ft.; R.U. to res.
I. E. Siderman-White et al's No. 1 Martinez, C SW NE Sec. 33-26n-67w. Drlg. below 1,400 ft.

Jackson County

W. N. W. Corp.'s No. 1 North Park Coal, NW NW Sec. 18-9n-78w. Drlg. 4,350 ft.; carrying 8¼-in. below 3,000 ft.; show carbon dioxide gas.

La Plata County

Nick Spatter's No. 1-X Bryce, C SW SW Sec. 31-33n-9w. Drlg. sh. below 3,600 ft.

Larimer County

Continental Oil Co.'s No. 1 Whitaker-Blunck, NE NE NW Sec. 30-8n-68w. T.D. 4,504 ft.; prep. to D.D.
Ed Shogren et al's No. 1 Frazier, SE Sec. 31-4n-69w. Drlg. below 860 ft. after cmtg. 6¼-in. at 240 ft. for W.S.O.

Logan County

The West Plains Oil Co.'s deep test in the West Plains district, which has been held up for 40 days at 1,190 ft. by a bad fishing job while trying to shut off water, has cleaned out hole and landed the 12½-in. on bottom and is drilling ahead in a dry hole. At 1,200 ft. it picked up a show of gas in an unidentified horizon which was sufficient to burn 2 ft. above the top of the bailer. The show of gas occurred in a limy formation after going out of a soft shale. This test will be watched with considerable interest as it is the only one drilling at this time in northeastern Colorado. It is fully financed to contract depth of 5,500 ft. and drilling is going ahead in three 8-hour shifts.

West Plains Oil Co.'s No. 1 Sheldon, SE NW SW Sec. 3-10n-55w. Drlg. below 1,200 ft.

Moffat County

Mountain Fuel Supply Co.'s No. 5 Wilson, SW SW NW Sec. 23-12n-100w. Cg. 2,016 ft.; started cg. at 2,005 ft.
Great Divide Pet. Co.'s No. 1 Wyatt, SE Sec. 4-6n-92w. T.D. 724 ft.; res. C.O.; 10-in. frozen at 650 ft.

Montezuma County

McElmo Oil Co.'s No. 1 West, NE NW NE Sec. 31-36n-17w. S.D. 5,285 ft.

Ouray County

Ridgway Pet. Synd.'s No. 1 Bennet, C NE SE Sec. 2-45n-8w. Spdg.

Park County

South Park Oil Co.'s No. 1 Leman, NE NE SE Sec. 34-11s-75w. S.D. 7,229 ft.

Rio Blanco County

W. L. W. Royalty Corp.'s No. 1 Rector, SE Sec. 34-2n-102w. Loc.
Texas Co.-California Co.'s No. 3 Unit, NE NE NE Sec. 27-3n-94w. Drlg. 2,735 ft.

Routt County

L. C. Craig-E. L. Moore's No. 1-X Erwin, C SW NE Sec. 33-7n-85w. T.D. 2,253 ft.; W.O. csg.

Washington County

Thurman Oil Tr.'s No. 1 Ruby, NW NW SW Sec. 3-5s-52w. S.D. 1,800 ft. in sd.; M.I. heavier rig.

WYOMING

Big Horn County

McDonald & Curtis' No. 1 Orchard, SE NW Sec. 24-51n-93w; Torchlight district. M.I.M. for deep test.

Frank S. Scott's No. 1 Robertson, SE SE SE Sec. 6-54n-93w. S.D. 650 ft.: indef.

Carbon County

Sinclair-Wyoming Oil Co.'s No. 14 Unit, NW SW NE Sec. 7-26n-89w. B.R.
MacKinnie Oil & Drlg. Co.'s No. 2 Union Pacific, NE SE NE Sec. 21-22n-78w. M.I.M.; (cor. loc.).
Ohio Oil Co.'s No. 12 State, CWL NE Sec. 34-20n-78w. Loc.
Tri-State O. & R. Co.'s No. 17, NW SE NW Sec. 20-21n-80w. S.D. 585 ft.

Converse County

Shawnee Expl. Co.'s No. 1 Salisbury, SE SW NE Sec. 27-32n-6w. Rdy. to spd.

Crook County

Union Oil Co. of Calif.'s No. 1 Casey, SE NE NW Sec. 3-57n-62w. M.I.M.; (cor. name and loc.).
Vickers Pet. Co.-Continental Oil Co.'s No. 1 Duncan-Lobban, NE NW SW Sec. 28-57n-64w. Loc.; prep. to M.I.

Fremont County

Sinclair-Wyoming Oil Co.'s No. 12 Unit, SW SE NW Sec. 23-32n-95w. B.R.
Pilot Oil Co.'s No. 5 Enos, CSL SE NE Sec. 21-3n-1w. Drlg. Cody sh. 465 ft.
Tropic Oil Co.'s No. 1 Govt., C SE SW Sec. 34-27n-90w. T.D. 3,495 ft.; cmtd. off tools after sdtrkg.
F. F. Hintze's No. 1 Govt., CWL NW NW Sec. 7-28n-92w. T.D. 1,135 ft.; ga. 3,000,000 cu. ft. gas at 1,030-1,112 ft.; open 10 min.; after 20 min. dropped to 500,000 cu. ft.

Hot Springs County

Oscar B. Grace's No. 5 Govt., Lot 3, SE NW Sec. 21-43n-92w. T.D. 472 ft.; P.&A.; Frontier at 453-68 ft.
Boybell Oil Co.'s No. 2 Kyne, NW SE SW Sec. 22-43n-92w. T.D. 469 ft.; will U.R. 6⅝-in. to set at 480 ft.; sulf. wtr. at 435-46 ft.; S.O. 421-34 ft. in sd.; (formerly Campbell et al).

Lincoln County

H. C. Harris et al's No. 1 Govt., SE NW NW Sec. 23-21n-117w. Drlg. 2,741 ft.
Fontenelle Dev. Co.'s No. 1 Pomroy, NE SW Sec. 5-24n-113w. Drlg. 810 ft.; 10-in. at 700 ft.

Natrona County

Lewis Gebhart's No. 1 Govt., NW NE SE Sec. 10-39n-78w, on east side of Salt Creek. B.R. (first report).
Continental Oil Co.'s No. 1 McGrath, C NW SW Sec. 15-34n-78w. T.D. 7,331 ft.; drld. out cmt. to 7,073 ft.; mixing new mud.
Royal Oil Corp.'s No. 1, SW SW SW Sec. 26-35n-80w. Drlg. 153 ft.; cmtd. 12½-in. at 103 ft.
Connelly Drlg. Co.'s No. 1 State, SW SW NW Sec. 36-36n-81w. T.D. 1,420 ft.; C.O. to res.
General Pet. Corp.'s No. 1-21-G, NW NW NW Sec. 21-35n-77w. T.D. 8,050 ft.; P.B. and perf. 7-in. opposite Shannon sd. at 4,530-70 ft.; swbd. 20 B.O.P.H.; no wtr.; M.I. pmp. equip. for test.

Niobrara County

Lance Creek had two new operations, both inside wells. There were no completions.

Continental Oil Co.'s No. 7 Sam Joss, NW SW NE Sec. 6-35n-65w. C.&P.; (first report).
Continental Oil Co.'s No. 11 Otto Rohlff, SE NE SE Sec. 31-36n-65w. B.R.; (first report).
Minnelusa Oil Corp.-MacKinnie O. & D. Co.'s No. 10 Thompson, NW NW NW Sec. 7-35n-65w. T.D. 5,258 ft.; cmtd. 7-in. at 5,215 ft.; rng. tbg. to test.
Ohio Oil Co.'s No. 14 E. Lamb-Acct. 2, C SW SE Sec. 5-35n-65w. Drlg. 1,360 ft.; cmtd. 10¾-in. at 300 ft.
Continental Oil Co.'s No. 3 E. Rohlff, SE SW NW Sec. 32-36n-65w. Drlg. 2,967 ft.
MacKinnie O. & D. Co.-Minnelusa Oil Corp.'s No. 9 Thompson, NW SE NW Sec. 7-35n-65w. T.D. 5,361 ft.; T. sat. Leo sd.
Continental Oil Co.'s No. 7-B Dielman, SE SE NE Sec. 7-35n-65w. Drlg. 4,439 ft.; basal Sundance at 4,270-4,340 ft.
Ohio Oil Co.'s No. 16 Putnam, SW SW NW Sec. 4-35n-65w. Drlg. 4,070 ft. in basal Sundance 5,330 ft.; acd. 1,000 gal.; flwg. while tstg.
Continental Oil Co.'s No. 6-B Dielman, NE SW NW Sec. 8-35n-65w. T.D. 5,490 ft.; recmtd. 7-in. at 5,448 ft.; W.O.C.
Ohio Oil Co.'s No. 15 Carrie Putnam, NW NE SW Sec. 33-36n-65w. T.D. 5,474 ft.; T. Leo sd. 5,255 ft.; cmtd. 7-in. at 5,351 ft.; W.O.C.
H. D. Moore's No. 1 Berggren, SE NW Sec. 23-35n-63w. T.D. 2,526 ft.; rng. 4½-in. for W.S.O.

Park County

Yale Pet. Corp.'s No. 2 Owens, NE SW SW Sec. 29-52n-100w. C.&P.
Yale Pet. Corp.'s No. 2 Frisby, NW SE NW Sec. 32-52n-100w. Drlg. 2,220 ft.
Yale Pet. Corp.'s No. 1-B Frisby, SW NE NE Sec. 31-32n-100w. C.&P.
Minnelusa Oil Corp.'s No. 1 Roney, SW SW NW Sec. 24-58n-98w. Drlg. 1,680 ft.

Sublette County

North La Barge Oil Co.'s No. 1 Govt., NE SE NE Sec. 28-27n-113w. T.D. 992 ft.; R.U.C.T. to D.D.
Yellowstone Oil Co.'s No. 1 Henry Budd, SW SE SE Sec. 6-30n-112w. T.D. 1,070 ft.; U.R. 10-in. to 986 ft. for W.S.O.
Texas Co.'s No. 1-E, NW Sec. 27-27n-113w. T.D. 129 ft.; redrlg. 95 ft.
Marvel Oil Co.'s No. 1-H Govt., CEL NE SE Sec. 28-27n-113w. Drlg. 300 ft.
North La Barge Oil Co.'s No. 3 Govt., SE SE NE Sec. 28-27n-113w. R.U.C.T.

Sweetwater County

Gus Pagrantz, et al's No. 1 Clark, C NW NE Sec. 22-19n-104w. Loc.; (cor. farm name).
Sinclair-Wyoming Oil Co.'s No. 93-A, SW NW NW Sec. 11-26n-90w. Drlg. 1,255 ft.
Red Desert Corp.'s No. 1 Aspden, NW SW NW Sec. 34-18n-103w. Loc.

Uinta County

Elynor Oil Co.'s No. 1, CEL SE SE Sec. 6-18n-116w. Cumberland dist. Spdg. 10 ft..

(Continued on Page 130)

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Texas and Louisiana Gulf

By
NEIL WILLIAMS

New Pool in Wharton County; Other Field Prospects Loom

HOUSTON, Tex., May 6.—The East Bernard area in northern Wharton County was added to the list of producing fields on the Texas Gulf Coast when Cockburn Oil Corp. completed No. 1 J. G. Leveridge. While no potential test has been made, the well is flowing at the estimated rate of 40 bbl. of 55-gravity distillate per day through a 13/64-in. choke, with tubing pressure 2,800 lb. and casing pressure 2,000 lb. The well was drilled to 8,461 ft., and completed in the Cook Mountain formation through perforated casing at 8,070-90 ft.

The discovery well is the third test drilled in the area. It is in the J. Scott Survey, 1 mile east of a dry hole drilled by Sterling Oil & Refining Co., which is reported to have logged showings of oil and gas in the Cook Mountain formation.

Standard Oil Co. of Texas' No. 61 State, Tract 54, a wildcat, offshore from Chambers County in Galveston Bay, looms as a possible pool opener as casing was expected to be cemented for a production test after an electrical survey and sidewall cores showed favorable indications. The well is bottomed at 9,538 ft., and sidewall cores showing oil and gas with volume content showing from 1.6 per cent to 8.3 per cent, were logged at 9,006 ft., 9,010 ft., 9,020 ft., and 9,022 ft. Cores at 9,046-91 ft., carried salt water. The well is about 12 miles southwest of Anahuac, and northeast of the Cedar Point field.

Prospect of opening production from new sands in the Chocolate Bayou field, Brazoria County, was not encouraging as production tests on two wells showed water with no show of oil or gas. Glenn McCarthy's No. 1 Andrau perforated casing at 11,410-13 ft., and swabbed wash water with no show of oil or gas, while the same operator's No. 2 Houston Farm Development Co., swabbed salt water with a trace of oil at a plugged-back depth of 10,134 ft.

Interest in wildcat operations was centered on Matagorda County, where three wells had reached critical stages. In the Wadsworth area, Deep Rock Oil Corp.'s No. 1 Petrucha, F. W. Dempsey Survey, topped the Flat Marginulina at 7,838 ft., and Marginulina No. 7 at 8,021 ft. The well is bottomed at 9,146 ft., and an electrical survey was being made. In the same area, in the J. C. Peyton Survey, Stanolind Oil & Gas Co. cemented a protection string of 9⅝-in. casing at 8,001 ft. in No. 1 General American Life Insurance Co. and is drilling ahead below 9,619 ft. This well topped the Marine Frio at 8,380 ft., and the Marginulina Texana at 8,440 ft. Northeast of Van Vleck, in the Freeman George Survey, Texas Co.'s No. 1 Taylor is drilling in shale below 8,917 ft.

The West Ranch field, Jackson County, received another important extension as Renwar Oil Corp. prepared to complete No. 1 Phillip after drill-stem testing recovered pipe-line oil. The well is about ½ mile west of production on a farmout lease from Shell Oil Co., Inc. Drill-stem testing at 5,580-96 ft., recovered 240 ft., of pipe-line oil while a 10-minute drill-stem test at 5,746-59 ft., recovered 1,440 ft. of oil and working pressure built up to 130 lb. The well will no doubt be completed in the 5,700-ft. sand which will extend production from that sand about 2 miles.

In the Tamina area, Montgomery County, David B. MacDaniel continues to test No. 1 Baldwin, and the well is showing about 400 lb. working pressure, and a small amount of oil while swabbing. Additional perforations were made with 106 holes at 9,392-9,425 ft., but the crew is unable to make the well produce by swabbing.

In the Caplen field, Galveston County, Sun Oil Co. opened a shallow gas sand with the completion of two wells. No. 4 Zinn & Foreman, northwest of No. 3 Zinn & Foreman, perforated casing at 4,447-67 ft., and the well was completed as a dry gas well producing through a 9/64-in. choke. No. 2 State flowed dry gas from a depth of 4,000 ft. Both wells were drilled to the 7,800-ft. pay.

In the Genoa area, Harris County, Hamill & Smith and others staked location for No. 1 C. B. Carter, a projected 6,500-ft. Frio-sand test in the Dickinson Putnam Survey. In Jasper County Houston Oil Co. and Republic Production Co. staked location for No. 1 Medranco, in the J. M. Medranco Survey, about 5 miles northeast of Buna and 1½ miles south of the companies' No. 1 Sabine Tram Co., a dry hole in Newton County.

South Louisiana

On the east flank of the Starks field, Calcasieu Parish, Louisiana, W. T. Burton is reported making preparations to test No. 2 Industrial Lumber Co., after coring sand, showing oil, at 5,340-85 ft. The well is about 1,000 ft. west of the operator's No. 1 Industrial Lumber Co., recently abandoned due to mechanical trouble.

The West Gueydan field, Vermilion Parish, was extended about 1,000 ft. southeast by Magnolia Petroleum Co.'s No. 1 Jessie Hartwell. Production was obtained by perforating casing at 6,676-88 ft., and the well flowed 149 bbl. per day through a ¼-in. choke. Location is in Section 5-12s-2w.

Union Sulphur Co. opened production from a new sand on the southeast flank of the old Sulphur field, Calcasieu Parish, with the completion of No. 867 fee. Drilled to 6,989 ft., the hole was plugged back to 6,973 ft., and production was obtained by perforating casing opposite oil sand at 6,313-28 ft. On a 24-hour gage, flowing through a 3/16-in. choke, the well made 312 bbl. of pipe-line oil.

In La Fourche Parish Humble Oil & Refining Co.'s No. 1 Caldwell, Section 115-14s-15e, is preparing to drill ahead after cementing a protection string of 9⅝-in. casing at 10,921 ft. This is believed to be the heaviest and longest string of this size casing ever cemented in the Gulf Coast area.

Locations for two wildcats were reported in St. Mary Parish. Morgan City Oil Co. is moving in material for No. 1 Adeline Sugar Co. in Section 33-13s-9e, while west of the Jeanerette field, Herton Oil Co. is building road to No. 1 H. Gonsoulin in Section 68-13s-8e.

TEXAS GULF COAST COMPLETIONS IN PROVEN FIELDS

Brazoria County

Hastings field: Stanolind Oil & Gas Co.'s No. 10 Surface, perforated casing 6,044-78 ft., 654 bbl., ⅛-in. choke. Manvel field: Texas Co.'s No. 24-A W. T. Belcher, sand 5,676-87 ft., 442 bbl., ¼-in. choke.

Chambers County

Anahuac field: S. W. Richardson's No. 1 Lindgren, perforated casing 7,171-90 ft., 567 bbl., ¼-in. choke.

Fort Bend County

Thompson field: Gulf Oil Corp.'s No. 11-Y R. A. Wolters, sand 4,301-27 ft., 114 bbl., ⅛-in. choke. Humble Oil & Refining Co.'s No. 35 Davis, sand 5,394-5,410 ft., 512 bbl., ¼-in. choke. Quintana Petroleum Corp.'s No. 9-A Wolters, sand 5,433-35 ft., 551 bbl., ¼-in. choke.

Galveston County

Caplen field: Sun Oil Co.'s No. 2 State, sand 3,900-4,015 ft., gas well. Sun Oil Co.'s No. 4 Zinn & Foreman, perforated casing 4,457-67 ft., gas well. Dickinson field: Humble Oil & Refining Co.'s No. 8 Fream, 8,300 ft., gas well.

Jackson County

West Ranch field: Magnolia Petroleum Co.'s No. 61-A West, 5,107 ft., 525 bbl., ¼-in. choke. Magnolia Petroleum Co.'s No. 66-A West, perforated casing 5,772-78 ft., 524 bbl., ¼-in. choke. Magnolia Petroleum Co.'s No. 69-A West, perforated casing 5,120-28 ft., 530 bbl., ¼-in. choke. Magnolia Petroleum Co.'s No. 70-A West, perforated casing 5,565-79 ft., 405 bbl., ¼-in. choke. Phillips Petroleum Co.'s No. 3 Toney, perforated casing 5,440-58 ft., 186 bbl., ⅛-in. choke. W. R. R. Oil Co.'s No. 2 State, perforated casing 5,724-40 ft., 515 bbl., ¼-in. choke.

Harris County

Friendswood field: Humble Oil & Refining Co.'s No. 2 Ruby, sand 6,079-86 ft., 559 bbl., ¼-in. choke.

Jefferson County

Lovells Lake field: Shell Oil Co., Inc.'s No. 2 Nelson, sand 7,784-7,807 ft., 156 bbl., ⅛-in. choke. Humble Oil & Refining Co.'s No. 9 Jefferson Land Co., 7,788 ft., 168 bbl., ¼-in. choke.

Polk County

Segno field: Gulf Oil Corp.'s No. 30 Wing, sand 8,084-8,105 ft., 537 bbl., ¼-in. choke.

Tyler County

Spurger field: Republic Production Co.'s No. 3 Sterne, perforated casing 4,936-40 ft., dry gas well.

Wharton County

Withers field: Humble Oil & Refining Co.'s No. 3 Blue Creek Ranch, 5,540 ft., 96 bbl., ⅛-in. choke. McDannald Oil Co.'s No. 1 Foley-Broussard, 5,544 ft., 107 bbl., ⅛-in. choke.

Indiana Fields

(Continued from Page 108)

Sun Oil Co.'s No. 3 Schroeder, SW SE NW Section 1-7s-12w, was drilling at 1,528 ft. Sun Oil Co.'s No. 3 Miller, NW SE SW Section 1-7s-12w, was shot with 30 qt. at 1,864-76 ft., and the crew was cleaning out. Nash Redwine and others' No. 1 Woods unit, NE SW SW Section 1-7s-12w, was shut down at 1,909 ft. Superior Oil Co. had rig up for No. 3 Mumford, SE NE NE Section 32-3s-13w.

Spencer County

In Spencer County Morgan, Keifer, Fortner and others spudded No. 1 Simms, SE cor. SW SE Section 22-6s-7w, and then shut down. Damron Brothers' No. 1 Carder, NE NE NW Section 31-5s-5w, shut down at 780 ft. Snell and others' No. 1 Crowder, NW SW NW Section 7-7s-7w, was shut down for orders, with 75 bbl. of oil in the tank. Casing, 5½-in. was set at 984 ft., total depth 1,032 ft. Troy Refining Co.'s No. 1 Mackey, NE cor. SW SE Section 31-7s-6w, spudded 100 ft. and shut down for repairs. Sturbois and others' No. 3 Boyd, SE NE NE Section 31-7s-6w, was a hole full of water at 925 ft. Six-inch casing was being pulled and the hole will be deepened. Sand was topped at 902 ft. Kentucky Natural Gas Co.'s No. 1 Parsley, NW SE NE Section 31-7s-6w, rigging up machine. Walter Duncan and others' No. 1 Miller, NE SW NE Section 31-7s-6w, drilling at 850 ft. L. M. Steele and others' No. 1 Frank, NW NW SE Section 30-7s-6w, ran 10-in. casing to 320 ft., total depth. C. J. Williams' No. 1 Walker, NE NE NW Section 6-8s-6w, rigging up machine. Damron Brothers' No. 1 Beckort, C NE SW Section 29-7s-6w, drilling at 450 ft.

Kentucky Natural Gas Co.'s No. 2 Scamahorn, C SE NW Section 29-7s-6w, had gas sand at 913-19 ft. The well produced 5,419,000 cu. ft. of gas the first day and was completed.

WHAT A DIFFERENCE THAT SEVENTY FEET MADE!

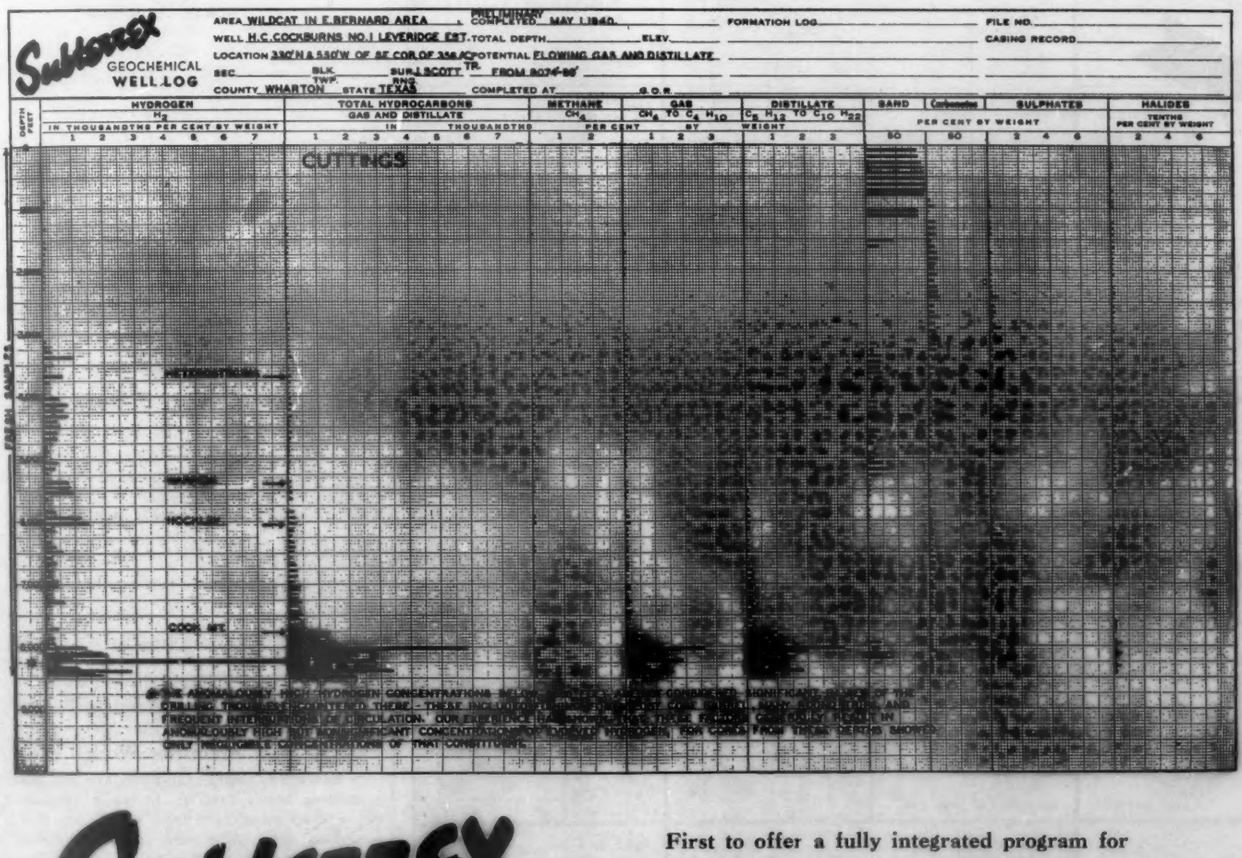
On April 8, 1940, Mr. H. C. Cockburn had reached the contract depth of 8000 feet in his No. 1 Leveridge Estate, on the East Bernard Prospect, Wharton County, Texas, without encouragement from any of the ordinary yardsticks generally used for evaluating the production possibilities of a wildcat well. Instructions were issued to abandon the test, and work had already started on tearing down the rig and derrick.

However, on the basis of the favorable evidence shown down to that depth by the Subterrex geochemical well log, Mr. Cockburn reconsidered his decision to abandon the wildcat at that depth, and authorized further drilling.

On May 1st, this "previously abandoned" wildcat became the discovery well for the East Bernard oil field. Perforated with 45 shots from 8074-8089 feet in shaly sand, the well was brought in producing gas and distillate on an 11/64 inch choke, with no salt water showing. The tubing pressure was 2200 pounds, and the casing pressure was 800 pounds.

This discovery follows by only six months Mr. Cockburn's previous discovery, by his No. 1 "Danzig", of the Rosenberg Oil Field, Fort Bend County, Texas. That discovery well also was logged geochemically by Subterrex, and also was reported favorable for production several hundred feet above the depth at which it was finally completed.

Through the courtesy of Mr. Cockburn, the geochemical log of the No. 1 Leveridge Estate is reproduced below.



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North Louisiana, Arkansas

By
GEORGE WEBER

New Pool Probable in Caddo Parish Near E. Texas Border

SHREVEPORT, La., May 6.—The new Wilcox production in La Salle Parish, east of the Urania field, ranks second to the shallow drilling in Caddo in volume this week. Of a total of eight drilling wells this week, one was completed and four others are at the testing stage. Placid Oil Co.'s No. 11 Louisiana Central, a south offset to the discovery, came in making an estimated 200 bbl. of crude after plugging off previous perforation points and shooting casing at 2,256-62 ft. Total depth of the well is 2,537 ft., with the Tertiary Wilcox topped at 1,618 ft. In a north offset position Placid Oil Co.'s No. 3 Goodpine has cored oil sands at 2,200-13 ft., 2,222-45 ft., and 2,363-75 ft., and has set casing at 2,405 ft. to test.

Arkansas Fuel Oil Co. is testing No. 1-A Goodpine, northeast of discovery, having found oil sands at 2,209-26 ft., 2,234-42 ft., and 2,362-84 ft. and salt-water sand at 2,384-95 ft. A string of 7-in. casing was set at 2,404 ft. Arkansas Fuel Oil Co. and Placid Oil Co.'s No. 2-A Goodpine, southeast offset to the discovery, has set casing at 2,430 ft. after coring oil sands at 2,232-42 ft., 2,260-71 ft., and 2,379-82 ft., and is also testing. Placid Oil Co.'s No. 12 Louisiana Central, two locations south of the discovery is also testing, having set casing at 2,382 ft. after finding oil sands at 2,174-95 ft., 2,213-20 ft., 2,330-33 ft., 2,243-48 ft., 2,293-2,312 ft., and 2,353-82 ft., and salt-water sand at 2,382-88 ft., total depth.

Caddo Test

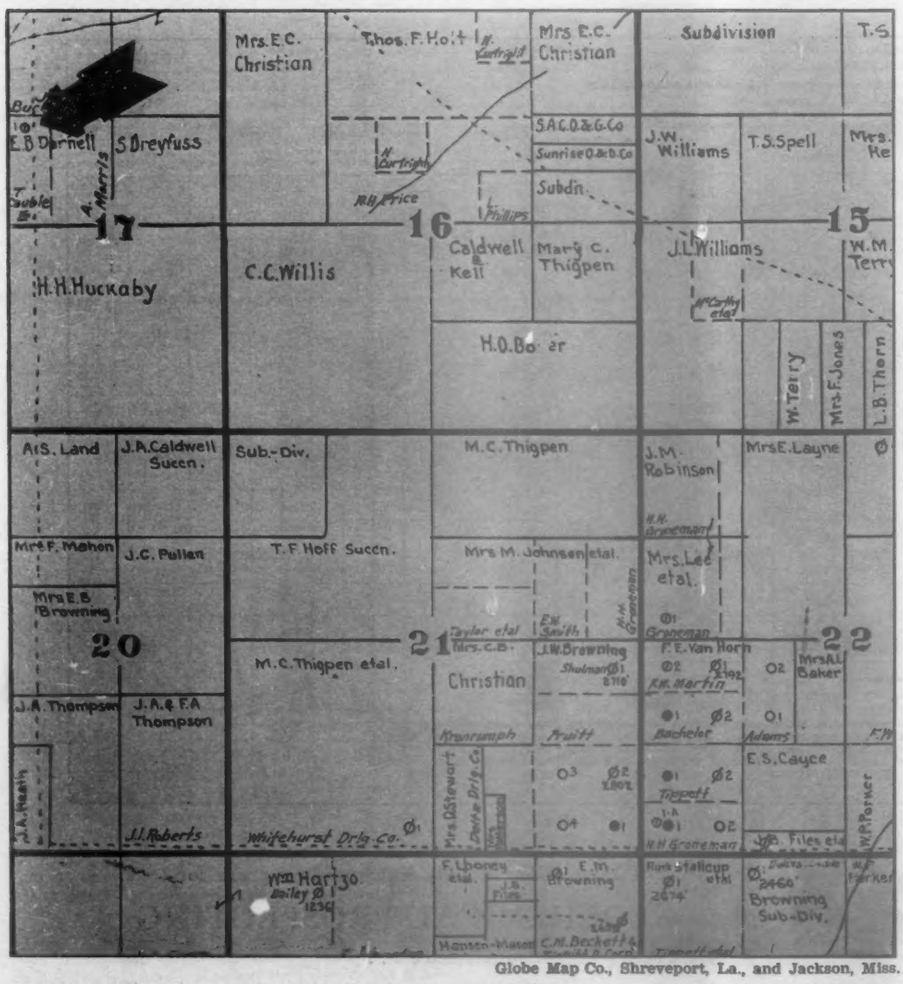
In Caddo Parish, northwest of the Vivian extension of Caddo field, and near the Texas border, D. T. Cauble's No. 1 Darnell has set 5⅛-in. casing at total depth of 3,204 ft., after finding oil sand at 3,002-10 ft. and 3,012-52 ft.

The Sugar Creek field of Claiborne Parish gained another good oil producer during the week with the completion of the L. E. Ozley No. 1 fee, Section 32-20-5, flowing at the rate of 233 bbl. daily through a ½-in. choke with tubing pressure of 900 lb. and casing pressure of 1,575 lb. The casing, set at 5,756 ft. was perforated at 5,740-44 ft. and 5,750-54 ft.

East Texas border counties are showing revived activity, with leasing heavy in Shelby County, in Cass County along the trend of the graben extending southwest from the Fouke area of Miller County, Arkansas, and in Harrison County, where an important wildcat is active.

Cass County has two new wildcats, and the E. A. Stiller No. 1 Glass, John Paxton Survey, is drilling below 3,700 ft. for the Paluxy. In Harrison County, the Fohs Oil Co.'s No. 1 Sypert near Hallsville is reported coring below 4,550 ft., although little information is being given out on the well. Its contract depth was originally 4,500 ft., and it is believed by some that the test may have missed the Paluxy or found no production possibilities in it, since it was expected at 4,250-4,300 ft.

The Smithland and Caddo areas of Marion County are active, and several shallow wildcats are under way in that county. Sabine and Shelby counties also show increased activity, with a wildcat staked in the former, and three active in the latter county.



Globe Map Co., Shreveport, La., and Jackson, Miss.

A possible shallow oil extension to the Vivian sector of Caddo Parish is indicated from show of oil in sands between 3,002 and 3,052 ft. in D. T. Cauble's No. 1 Darnell. Casing was set at 3,204 ft. and the sands will be tested this week

Production by Pool

Estimated daily gross production, all companies, week ended May 3:

NORTH LOUISIANA

	Bbl.
Bellevue	470
Caddo, light	5,045
Caddo, heavy	2,130
Converse	490
Cotton Valley	*14,825
Cross Lake	4,895
De Soto and Red River	990
Elm Grove	260
Haynesville	2,690
Holly	55
Homer	2,780
Lisbon	5,370
Olla	585
Pleasant Hill	85
Rodessa	20,995
Sarepta-Cartervilie	†370
Sligo	1,905
Sugar Creek	795
Urania	2,840
Zwolle	1,900
Total North Louisiana	69,475

SOUTH ARKANSAS

Atlanta	1,225
Big Creek	70
Buckner	2,665
Champagnolle	1,135
Dorcheat	180
El Dorado	1,660
Lewisville	740
Lisbon	210
Magnolia	19,980
Miller County	275
Nevada	550
Nick Springs	125
Rodessa	2,355
Schuler	18,570
Smackover, light	1,695
Smackover, heavy	13,875
Stephens	510
Troy	1,280
Urbana	915
Village	1,110
Total North Arkansas	69,125

*4,180 bbl. is distillate. †90 bbl. is distillate. Rodessa, Texas, 22,030 bbl.

Arkansas Work

In Lafayette County, Arkansas, Atlantic Refining Co. is drilling below 7,000 ft. in No. 1 Bodcaw Lumber Co., a deep Smackover lime test which had a slight indication of oil in a core taken at 6,868-82 ft. The core recovery consisted of 13 ft. of gray shale and 1 ft. of hard, tight, slightly porous sand, with a slight stain and odor of oil. Operators did not test the section.

In Miller County Standard Oil Co. is below 8,388 ft. in No. 1 Sturgis, without any further deep-oil possibilities. The test had a commercial showing of oil in the Paluxy formation and will be plugged back and

completed in that horizon if deeper production is not found.

NORTH LOUISIANA COMPLETIONS

[illegible]—[illegible] Parish

Union Producing Co.'s No. 2-B Trigger-Smith, Section 19-17-11, 220,000,000 cu. ft. of gas, open flow, rock pressure 2,101 lb., total depth 5,135 ft.

Caddo—Caddo Parish

L. M. Calhoun, Jr., trustee's No. 1-A Cheshire, Section 32-21-15, pumping 10 bbl., total depth 1,552 ft. L. & A. Oil Co.'s No. 4 Burton, Section 7-20-15, pumping 60 bbl. acidized with 4,000 gal., total depth 1,528 ft. H. Philp's No. 1 Muslow, Section 31-21-15, flowing 20 bbl., open tubing, total depth 1,560 ft. E. A. Stiller's No. 2 Stiles, Section 28-21-16, pumping 40 bbl., total depth 2,376 ft. J. G. Strahan's No. 3-A Hart, Section 28-21-16, flowing 100 bbl., set 5½-in. casing 2,250 ft., total depth 2,372 ft. H. J. Strief's No. 1-D Noel estate, Section 12-20-16, 250 bbl., set 7-in. casing at 1,330 ft., total depth 1,525 ft. L. L. Sugar's No. 5 Hart, Section 22-21-16, pumping 12 bbl., total depth 1,027 ft., Texas Co.'s No. 9 Caddo fee, Section 7-20-15, pumping 54 bbl., acidized with 4,000 gal., total depth 1,508 ft. Texas Co.'s No. 7-A Herndon, Section 14-21-15, 250 bbl. oil and 20 bbl. salt water, open tubing, total depth 1,580 ft.

Sugar Creek—Claiborne Parish

L. E. Ozley's No. 1 fee, 1,220 ft. north and 300 ft. west of SE cor. Section 32-20-5, 233 bbl., ⅛-in. choke, tubing pressure 900 lb., casing pressure 1,575 lb., perforated at 5,740-44 ft. and 5,750-54 ft., total depth 5,769 ft.

Urania—Grant Parish

R. D. Bevil, Jr.'s No. 1 Swope estate, 150 ft. north and 270 ft. west of SE cor. NE SE Section 18-9n-1e, pumping 75 bbl., top sand 1,600 ft., total depth 1,604 ft.

Olla—La Salle Parish

Placid Oil Co.'s No. 11 Louisiana Central Lumber Co., C SE NE Section 13-10-2e, 200 bbl., total depth 2,537 ft., perforated casing at 2,256-62 ft.

Monroe—Union Parish

Memphis Natural Gas Co.'s No. 7 Lankford, Section 2-21-3, 1,000,000 cu. ft. of gas, rock pressure 940 lb., total depth 2,195 ft.

ARKANSAS COMPLETIONS

Atlanta—Columbia County

Tide Water Associated Oil Co. and Seaboard Oil Co.'s No. 1 W. T. Beene, C NE NW Section 14-18-19, 720 bbl., ¼-in. choke, tubing pressure 800 lb., casing pressure 1,200 lb., set 5-in. casing at 8,160 ft., total depth 8,165 ft.

Lewisville—Lafayette County

A. H. Boswell and others' No. 1 C. H. Ellis, 175 ft. of NW cor. SW NE Section 19-16-23, 288 bbl., total depth 3,462 ft., 5½-in. casing at 3,459 ft., acidized.

Urbana—Union County

McCressien Oil Co.'s No. 3 J. C. Parker, 250 ft. north and 400 ft. east of SW cor. NW SE Section 3-18-13, pumping 90 bbl. oil and 90 bbl. salt water, total depth 3,596 ft.

EAST TEXAS BORDER COMPLETIONS

Caddo—Marion County

John Coates' No. 1 Burr and others, John Reeves Sur., 14 bbl. pumping, total depth 2,402 ft., set 5½-in. casing at 2,375 ft.

Smithland—Marion County

Sanders & Wycliffe's No. 1 M. E. Livingston, W. Coore Survey, pumping 37 bbl., total depth 2,416 ft.

Shelbyville—Shelby County

Superior Oil Co.'s No. 1 Pickering Lumber Co., 990 ft. east and 330 ft. north of SW cor., Lot 4, W. J. Crane Survey, 88,000 cu. ft. of gas, open flow, and small spray of oil. Total depth 2,658 ft., plugged back to 1,918 ft. and perforated casing at 1,880-1,913 ft., 7-in. casing set at 2,595 ft.

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Southwest Texas District

By
F. L. SINGLETON

Good Signs of New Pools in Victoria and Jim Wells Areas

CORPUS CHRISTI, Tex., May 6.—Exploratory operations in Victoria County continue to hold attention in the Southwest Texas district as preparations were being made to test another pool opener. The possible discovery well is Texas Gulf Producing Co.'s No. 1 Kester, about 2½ miles west of the Heyser field in the C. M. Creanor Survey, and 3 miles southwest of Bloomington. The well was drilled to a depth below 6,500 ft., and 5½-in. casing is being cemented below 5,800 ft., preparatory to testing a sand section at 5,880-88 ft., where a 26-minute drill-stem test recovered 425 ft. of pipe-line oil and 90 ft. of salt water. Working pressure built up to 24 lb. Should this sand fail to produce, the hole will be plugged back and a test made at 5,090-5,135 ft., where an electrical survey is reported to have shown a gas sand. The sand section is believed to be the Frio, and corresponds with that of the Heyser field.

In the Fagan field, Refugio County, Quintana Petroleum Co. and others' No. 1 Fagan, is flowing approximately 70 bbl. of fluid per day, of which 75 per cent is oil and the remainder salt water. The well is testing through a 3/32-in. choke, and tubing pressure is 475 lb. and casing pressure 125 lb. The well is bottomed at 6,057 ft., and is producing from 5,841-43 ft.

In Jim Wells County, about 1½ miles southeast of the Wade City field, Henshaw Brothers were preparing to test No. 1 Pauline Blashke, which in the previous week showed promise of opening a major extension or a new field, when a drill-stem test at 5,088-5,102 ft., recovered 1,350 ft. of oil and mud in 10 minutes. The well is bottomed at 5,603 ft., and 5½-in. casing cemented at 5,175 ft. The sand section was cored much lower than wells in the field proper, and it has not been determined whether the well, if completed for a producer, will open a pool or an important extension. In the same area, H. H. Howell is moving in material for No. 1 Emil Schroede, a farmout lease from Shell Oil Co., Inc. Approximately 1 mile northeast of the field, Windsor Oil Co.'s No. 1 Kusel, Casa Blanca grant, was abandoned at a total depth of 5,012 ft.

Offshore from Kleberg County in Laguna Madre Bay, Skelly Oil Co.'s No. 1 State is drilling in shale below 7,815 ft., and no additional showings of oil or gas have been reported. This well made its appearance as a probable pool opener last week when a 9½-minute drill-stem test at 7,455-60 ft., recovered 294 ft. of oil, and several hundred pounds of working pressure.

In Nueces Bay Standard Oil & Gas Co. made a location for No. 1 State, about 1½ miles southwest of Sinclair Prairie Oil Co.'s operation on the south edge of Corpus Christi Bay in Nueces County. Approximately 1 mile west of the Baldwin field, Southern Minerals Corp. has taken a farmout from Magnolia Petroleum Co. on the Hellman 440-acre tract, and the company is moving in material for a 6,500-ft. test in Section 148, E. R. Oliver, Jr., Survey. On the east flank of the Stratton field, the same company is moving in a rig for No. 1 Henry Bertram, Section 203, Bishop subdivision.

A short extension was recorded for the Richard King field, Nueces County, as Southern Minerals Corp. completed No. 8-A King for an initial production of 165 bbl. per day through a 5/32-in. choke. Production is from perforated casing at 5,401-06 ft.

An important extension to the Fitzsimmons field in Duval County was indicated by Sun Oil Co.'s No. 1 Garcia, 2½ miles east of production which recovered gas-cut drilling mud, and showed 550 lb. working pressure on a 19-minute drill-stem test at 4,724-34 ft. Late in the week the well is reported to have cored broken sand with an oil odor at 4,904-16 ft., and a drill-stem test was being made.

In the same county, about 1 mile south of production in the Hoffman field, Magnolia Petroleum Co.'s No. 9 Well, is reported to have flowed oil on a drill-stem test in the Government Wells sand at 2,650-70 ft., and another test was scheduled to be made in the Loma Novia sand, cored at approximately 2,750 ft.

Interstate Minerals Corp.'s No. 46 Lopez, which opened the "Glen" field, Webb County the previous week, flowed at the rate of 83 bbl. of pipe-line oil per day through open 2-in. tubing. The field looms as one of the best discoveries made in the Laredo district in several months, and the area is expected to receive an active drilling campaign. The well is producing typical Mirando-type crude from a sand and sandy shale section at 2,173-85 ft.

W. C. McBride, Inc.'s No. 2 Pedro Leal, a wildcat, situated in the J. Poitevent Survey, 1 mile west of the Kohler field, cored sand with an oil showing at 2,522-25 ft., and on a 10-minute drill-stem test, showed 550 lb. working pressure, and recovered 20 ft. of gas-cut drilling mud. Another test at 2,530-39 ft., the total depth, tested 90 lb. working pressure and 70 ft. of oily brackish water.

Edwin M. Jones' No. 1 George West, a Tertiary Wilcox test near the town of George West, Live Oak County, is reported to have recovered salt water with a slight showing of gas on a 13-hour drill-stem test at 9,484-9,518 ft., and the operator is preparing to plug back and test at approximately 7,600 ft., which is near top of the Wilcox formation. Total depth of the hole is 10,389 ft.

In the Balcones fault-line district, and located in the Tangleford area, Lee County, Fred Pederson and others are preparing to run casing in No. 1 Irene Brown, which is bottomed in lime formation at 8,202 ft. It is reported that the casing will be cemented to test the Pettit zone, and if this section fails to produce, the hole will be carried deeper.

SOUTHWEST TEXAS COMPLETIONS IN PROVEN FIELDS

Caldwell County

Dale field: Ralph Ogden's No. 6 Talley, 2,209 ft., 132 bbl., pumping.

Calhoun-Victoria Counties

Heyser field: Gulf Oil Corp.'s No. 34-B Traylor, sand 5,480-95 ft., 87 bbl., 3/32-in. choke.

Duval County

Cedro Hill field: Magnolia Petroleum Co.'s No. 3 Duval County Ranch Co., perforated casing 1,443-45 ft., 23 bbl., ½-in. choke. Hoffman field: Magnolia Petroleum Co.'s No. 47 Well, 2,950 ft., dry and abandoned. Magnolia Petroleum Co.'s No. 51 Well, sand 2,796-2,806 ft., 50 bbl., jetting. Magnolia Petroleum Co.'s No. 54 Well, 2,694 ft., dry and abandoned. Peters field: G. G. Mortimer, perforated casing 2,460-90 ft., 5½ bbl., jetting. Rancho Solo field: Andrus, Reed and others' No. 2 Peters, 3,007 ft., dry and abandoned.

Jim Hogg County

Colorado field: Humble Oil & Refining Co.'s No. 5 King, 3,082 ft., 259 bbl., 3/16-in. choke. Kelsey field: Humble Oil & Refining Co.'s No. 64 McGill, 4,734 ft., 56 bbl., in 19 hours, 7/64-in. choke.

Jim Wells County

Wade City field: Rodney DeLange's No. 5 McNeil, perforated casing 4,920-28 ft., 162 bbl., 3/16-in. choke.

Nueces County

Minnie Bock field: E. A. Graham and others' No. 2 Kampfhenkel, perforated casing 3,811-14 ft., 38 bbl., 7/64-in. choke.

Refugio County

La Rosa field: Coronado Corp.'s No. 6 Michna, perforated casing 5,850-60 ft., 100,000,000 cu. ft. gas and 1,650 bbl., distillate open flow. Refugio field: Houston Oil Co.'s No. 1-K Rooke, 6,739 ft., dry and abandoned.

San Patricio County

East White Point field: O. W. Killam's No. 12 Taft, perforated casing 5,623-29 ft., 140 bbl., ⅛-in. choke. Republic Natural Gas Co.'s No. 32 Rachal, perforated casing 5,558-73 ft., 149 bbl., ⅛-in. choke. Plymouth field: Fred Wood and others' No. 1 Cryer, perforated casing 5,608-11 ft., 136 bbl., ⅛-in. choke.

Starr County

Rincon field: W. R. Davis & Co.'s No. 13-B Slick, perforated casing 4,224-45 ft., 321 bbl., ¼-in. choke. South Ricaby field: Clopton & Mitchell's No. 7 Wardner, 1,864 ft., dry and abandoned.

Victoria County

Keeran field: Barnsdall Oil Co.'s No. 7 Keeran, sand 5,610-16 ft., 49 bbl., ⅛-in. choke. Victoria field: Johnson & Johnson's No. 2 Dever, 3,341 ft., dry and abandoned.

Webb County

Adami field: Humble Oil & Refining Co.'s No. 3 Yeager, 986 ft., 8 bbl., fluid, 12 per cent salt water, pumping. Humble Oil & Refining Co.'s No. 8 Yeager, 1,004 ft., 17 bbl. of fluid, 3 per cent salt water, pumping. Bruni field: O. W. Killam's No. 65 Bruni, 3,480 ft., dry and abandoned. Volpe field: Harvey & Henderson's No. 5 Benavides, sand 2,448-58 ft., 50 bbl., pumping. West Cole field: Magnolia Petroleum Co.'s No. 9 Benavides, 3,270 ft., dry and abandoned. West Cole field: V. G. Schimmel's No. 2-B Benavides, 2,362 ft., 46 bbl., pumping.

Zapata County

Charco Redondo field: H. L. Curry's No. 12 Trevino, 1,505 ft., dry and abandoned. Comitas field: J. P. Nash's No. 23-C Haynes, sand 1,101-19 ft., 2 bbl., pumping. Mirando Valley field: Interstate Minerals, Inc.'s No. 44 Lopez, sand 1,745-68 ft., 17 bbl., pumping.

California Fields

(Continued from Page 119)

the basis of 200 bbl. per day production indicates that Surf Associates, Inc., will pay a royalty of 29.4 per cent on two wells and 36.54 per cent on another and that Termo Co. will pay a royalty of 37.1 per cent on two wells and 39.2 per cent on another. The 39.2 per cent bid of Termo Co. represents the highest royalty bid ever made to the state for an oil lease. This latter well is the company's No. 4 fee, which was a straight hole at 4,719 ft., but which will now be directed beneath the tidelands.

Coastal District

Chanslor-Canfield Midway Oil Co. completed an excellent well in the Rincon field of Ventura County when No. 31-B Hobson in Section 17-3-24 was brought in flowing 385 bbl. of 29.6-gravity oil cutting 3 per cent and 245,000 cu. ft. of gas per day from 4,009 ft., flowing through a 28/64-in. bean behind a tubing pressure of 150 lb. and a casing pressure of 475 lb. In the Santa Maria field of Santa Barbara County, Union Oil Co. completed No. 18 Cal-Coast in Section 26-9-34, pumping 51 bbl. of 21.5-gravity oil cutting 15 per cent daily from 4,160 ft.

Complete 32 Wells in the Old Southwest Penn-Grade Fields

By STAFF CORRESPONDENT

PITTSBURGH, Pa., May 4.—On Chestnut Ridge, Fayette County, Pennsylvania, New Penn Development Co., William E. Snee, and others are shut down at 7,036 ft. in the test on the Piedmont Coal Co. in North Union Township, and will cement back 50 ft. on account of caving which in itself presents an angle to possible difficulties in defining the structure.

In this test the top of the Onondaga lime was placed at 6,663 ft. and the top of the cherty zone at 6,692 ft., or minus 4,514 ft. below sea level.

SOUTHEAST OHIO

In Athens County Heivley & Parrett drilled a dry hole on the Potter farm at Carthage Gap, Section 18, Carthage Township, through lime to 3,823 ft. In Fraction 24, same township, C. W. Nuzum and others drilled No. 5 fee through First Cow Run sand to 395 ft. and it was dry.

In Coshocton County Pure Oil Co. completed a test on the Myers farm, Section 14, Pike Township, in Clinton sand at 3,198 ft. It is showing 15 bbl. a day before shot.

In Guernsey County George E. Jewell and others completed a test on the Ross Robinson farm, Section 13, Wills Township, in the second Cow Run sand at 474 ft. It produced 18 bbl. the first 2 days.

In Hocking County Kachelmacher estate completed a well on the Cora Haynes farm, Section 35, Green Township, in Clinton sand at 2,833 ft., which produced 18 bbl. the first day after shot.

In Licking County C. R. Settles and others' well on the Grace Varner farm, Lot 10, Mary Ann Township, completed in Berea sand at 800 ft., made 10 bbl. the first day after shot. In Section 6, H. A. Tightner and others completed a test at 781 ft., Berea sand, and it is a 2-bbl. pumper.

In Morgan County W. L. Bowman and others drilled No. 3 C. G. and Adam Thompson, Section 13, Marion Township, through First Cow Run sand to 466 ft. It was dry.

In Muskingum County Atha Oil Co. completed No. 4 C. Clyde Sherman, Section 17, Harrison Township, at 4,138 ft., the Medina, and it will flow 5 bbl. a day. It had a volume of 170,000 cu. ft. of gas a day in the Clinton sand. It has not been shot. In Section 24, Brush Creek Township, Gas Producing Co. of Ohio drilled a dry hole on the B. B. Weaver farm through the Medina to 3,835 ft.

In Noble County C. W. Rich and others completed a gas well on the James A. Findley farm, Section 30, Seneca Township, through Berea grit to 1,570 ft. and it gaged 75,000 cu. ft. a day.

In Perry County Preston Oil Co. completed No. 2 Albert C. Randolph, Section 17, Clayton Township, in Clinton sand at 3,290 ft., which gages 350,000 cu. ft. of gas and 5 bbl. of oil a day before the shot. In this quarter section this company completed No. 2 William H. Pettit at 3,264 ft., which gages 100,000 cu. ft. and 1 bbl. a day and is also waiting to be shot.

In Jackson Township, Perry County, Hover Oil Co. drilled a dry hole on the William Spohn farm, NE Section 29, through the Berea grit to 950 ft. and it was dry.

In Washington County, Asher Rinard and others completed a test on fee, Section 22, Ludlow Township, in the Squaw sand at 1,503 ft., which is good for 1 bbl. a day along with 20,000 cu. ft. of gas.

WEST VIRGINIA

In Roane County, West Virginia, O. H. Reed and others deepened a former gas well from 1,550 to 1,649 ft., the Salt sand, and it is now good for 25 bbl. a day.

In Lincoln County G. H. Jackson and others are cleaning out after a shot on the C. Adkins farm in Union district with the bottom of the hole at 3,528 ft., Brown shale, and a gage of 360,000 cu. ft. a day.

In Ritchie County F. A. Deem completed a gas well on the J. F. Hatfield farm in Grant district at 2,736 ft. with a gage of 212,000 cu. ft. a day from the Injun sand and no sand found below. In Murphy district G. L. Shimer and others completed No. 1 G. P. Ryan and John Clark at 2,175 ft., the Squaw sand, which is a gas well gaging only 17,000 cu. ft. a day and no Berea found.

In Logan County the South Penn Natural Gas Co. completed No. 58 Yawkey & Freeman in Logan district at 2,686 ft., with 1,463,000 cu. ft. of gas a day showing from the Gantz and Berea sands.

In Wirt County, W. C. Patterson's No. 3 fee, in Clay district, found the Cow Run sand dry as did Glenn Castro in No. 1 Hoffman and Shore, same district.

Oriskany Gas Field

In Poca district, Kanawha County, United Fuel Gas Co. completed No. 4864 W. J. Glass and others, with the Oriskany sand topped at 5,132 ft. and a gage of 1,465,000 cu. ft. a day at 5,138 ft. Here this company is drilling at 1,467 ft. in No. 4878 J. P. Bailey.

SOUTHWEST PENNSYLVANIA

In Allegheny County, Dr. Walters and others completed No. 2 John H. Flick, in West Deer Township, at 1,845 ft. with the top of the Fourth sand at 1,828 ft. and swabbed 35 bbl. the first 8 hours. In this pool Robert Marshall completed No. 4 William Rittman at 1,843 ft., with the Fourth sand topped at 1,825 ft. The sand was dry before the shot but after the shot filled up 300 ft. and is good for 25 bbl. a day.

Armstrong County

In Kittanning Township, Armstrong County, John Wray completed a test on the Benjamin Miller farm at 3,600 ft. through Bradford and Tiona sands. It is a small gas well from the Hundred-foot sand.

Indiana-Clarion-Westmoreland

In White Township, Indiana County, T. W. Phillips Gas & Oil Co. drilled No. 1 H. W. Leech to 3,318 ft. and No. 1 J. J. McClain to 3,323 ft. Both penetrated the Bradford sands and were dry.

Fayette-Greene-Washington

In Menallen Township, Fayette County, Wahler-Powers Oil & Gas Co. completed a gas well on the Shamrock Farms Co. at 1,377 ft., with the Big Injun sand topped at 1,207 ft. and 1,000,000 cu. ft. of gas a day at 1,370 ft. In German Township this company is drilling at 1,670 ft. in No. 1 Felix Valerio.

In Nicholson Township, Fayette County, Duquesne Gas Co. completed a gasser on the Mary Dyrr farm at 2,320 ft. with the Fifth sand at 2,244-72 ft. and 175,000 cu. ft. of gas a day at 2,245 ft. It later blew down to 45,000 cu. ft. a day. In this township, the Greensboro Gas Co. is drilling No. 1 S. Kopsey at 1,900 ft. and No. 1 Emmet Diamond at 1,525 ft.

In Greene County Peoples Natural Gas Co. deepened No. 2187 William Haines in Perry Township to 3,308 ft. with Bayard sand at 3,183-3,215 ft. and 36,000 cu. ft. of gas a day at 3,183-3,204 ft. In Wayne Township this company deepened No. 912 James H. Cole to 3,367 ft. through the Bayard sand and it gages 40,000 cu. ft. a day.

Deep Tests

In Beaver County John T. Galey and others shut down at 6,823 ft. in the test on the James Tennis farm in South Beaver County, with the top of the Queenston at 6,800 ft. and that member not yet drilled through. There was no showing in that formation.

On Chestnut Ridge, South Union Township, Fayette County, Peoples Natural Gas Co. is drilling at 811 ft. in No. 2 Piedmont Coal Co. and with 11-in. casing set at about 600 ft. In Maryland the New Penn Development Co. and William E. Snee are drilling at 6,252 ft. in the test on the Humberson farm on the Accident dome in Garrett County. In Stewart Township, on Laurel Ridge in Fayette County, these operators and E. G. Mueller are drilling at 7,125 ft., with work going slowly due to caving.

Ohio Fields

(Continued from Page 108)

In the Newark field, Licking County, Madison Township, Ohio Fuel Gas Co.'s No. 2 J. D. Jones, Lot 7, second quarter, is a gas well, gaging 1,000,000 cu. ft., open flow, from Newburg sand at 2,221-46 ft. In Newton Township Allen Willey and others' No. 4 Fred Eshelman, fourth quarter, is good for 1,100,000 cu. ft. of gas, open flow, from Clinton sand at 2,552-78 ft. In Newark Township National Drilling Co.'s No. 2 W. C. Hall, fourth quarter, is rated at 500,000 cu. ft. of gas, open flow, from Clinton at 2,300-29 ft. In Mary Ann Township H. C. Lightner and others' No. 1 R. S. Reidenour, Lot 6, fourth quarter, made 8 bbl. of oil the first day after shot in Berea sand at 770-80 ft.

In Meigs County, Letart Township, Roy Proffitt and others' No. 1 Victoria Norris, Section 6, was dry at 720 ft.

In Noble County, Jackson Township, George White and others' No. 1 Viola Wharff, Section 13, had a small oil showing at 850-60 ft., and was abandoned at 875 ft.

In Stark County, Lawrence Township, Dun Mar Oil & Gas Co.'s No. 1 Philip H. Rohr, Section 12, gaged 800,000 cu. ft. of gas, open flow, in the Clinton, depth 4,105 ft.

In Summit County, Green Township, Obermiller Brothers' No. 1 Thelma Brown, Section 36, was abandoned at 4,447 ft. after finding only a small show of gas in the Clinton.

In Vinton County, Richland Township, Kelch Brothers' No. 1 A. P. Phillips, Section 2, is a small gasser in the Hamden sand, depth 868 ft.

In Washington County, Barlow Township, S. W. Porter and others' No. 1 L. E. Hardy, Section 7, gaged 420,000 cu. ft. of gas, open flow from the Maxton at 1,347-53 ft. In Grandview Township C. D. Uhl's No. 10 J. A. Huffman, Section 22, made 8 bbl. of oil the first 24 hours after a shot in the first Cow Run at 857-65 ft.

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NEW MAP OF THE
UNITED STATES
Shows oil fields in green, gas fields in red, with index giving official names and location of 5300 fields set up alphabetically by States. Also index giving names and location of Counties in the State of Texas. Small inset showing favorable and unfavorable areas of oil. Shows townships and ranges, county seats, county and state lines. In active oil states, all cities and towns are shown. Size of map 9' x 6' high by 15' x 6' long. Scale 1" = 16 miles.
MID-CONTINENT AREA MAP
Shows oil and gas fields in color with State indexes giving official field names and location. Covers New Mexico to Alabama, Nebraska to Gulf. Scale 1" = 12 miles. Size 82" x 108".
UNITED STATES MAP
Shows oil and gas fields in color with official field names. Scale 1" = 30 miles. Size 48" x 78".
Each gives complete information and prices sent on request.
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Oklahoma Fields

(Continued from Page 109)

Payne County

Blackwell Oil & Gas Co.'s No. 1 Scott, SW NW SE Section 24-18-4, had Oswego lime at 2,885-2,985 ft., total depth, acidized and pumped 140 bbl. of oil in 24 hours.

Helmerich and Payne's No. 1-B State, a wildcat, in the SE NE SE Section 33-20-4, was drilling at 255 ft.

Caddo County

Nichlos' No. 4 Royce, SE SW NE Section 12-5-9w, was drilled to 3,580 ft. After perforating casing at 3,508-45 ft. it made an estimated 2,000,000 cu. ft. of gas daily and 15 bbl. of oil.

Phillips Petroleum Co.'s No. 4 Garrison, NE SW NE Section 34-6-10w, found pay at 3,359-77 ft., total depth 3,386 ft., and flowed 220 bbl. of 36.6-gravity oil in 4 hours, making potential of 1,320 bbl.

Juguley's No. 1 Yingling, SE NW SE Section 3-5-9w, is a rig up.

Okmulgee County

B. H. Young's No. 1 Miller, NW SW NE Section 6-15-14, wildcat in Okmulgee County, has Dutcher sand at 1,670-80 ft., sand at 1,739-49 ft., total depth, with a slight showing of oil and a hole full of water and was abandoned.

Briscoe & McGuire's No. 2 Gill, was completed for 10 bbl. of oil daily at 1,705 ft., total depth. J. Callahan's No. 1-A Payne, SW SW SW Section 3-13-14, was dry and abandoned at 1,250 ft. W. O. Shock's No. 1 McKee, SE SW NE Section 17-14-11, produced 110 bbl. of oil initially in 24 hours and was completed at total depth of 2,388 ft.

Wagoner County

French Brothers' No. 2 Hall, NW SW NE SE Section 20-18-17, Wagoner County, gaged 70,000 cu. ft. of gas daily at total depth of 794 ft., and was completed.

F. B. Breshear's No. 1 fee, NE NE NE NW Section 12-17-17, was dry and abandoned at 800 ft., total depth.

Carter County

Shell Oil Co., Inc.'s No. 46 Tubbee, SE NE NW NW Section 24-4s-3w, Healdton field, Carter County, was completed for 25 bbl. of oil daily at total depth of 1,220 ft.

First Reports

New work reported in Pontotoc County: Patterson's No. 1 Isaacs, a wildcat in SW NW NE Section 3-4-4, was rigging up rotary. Bray's No. 1 fee, NW SE NW, drilling 160 ft.; Lake's No. 5-B Gray, NW SE SW, Section 25-5-4, rigging up rotary. Harwell's No. 2 Summers, NE SE SE Section 26-5-4, spudding. Superior Oil Corp.'s No. 7 Summers, NE SW NW Section 36-5-4, drilling 1,035 ft.

Tillman County

Three wildcats were reported in Tillman County. Cline's No. 1 Staley, a 6,000-ft. test in the SE NW Section 10-2s-19w, was a location; Kadane's No. 1 Andrews, NW NW Section 35-2s-19w, was a location. Gulf Oil Corp.'s No. 1 Owen, NE cor. Section 27-4s-15w, southwest of Grandfield, was a location. Objective is the Arbuckle lime.

Rocky Mountain Area

(Continued from Page 123)

Washakie County

Paul Boether's No. 1 Govt., SW SW NW Sec. 4-47n-90w. T.D. 2,160 ft.; R.U. mch. to D.D.

Weston County

Geo. Keisling's No. 2 Lundberg, CWL NE SE Sec. 35-46n-64w. Rdy. to spd.
Riggs Oil Co.'s No. 4, CNL NE SE Sec. 16-46n-64w. Loc.; will go to Sundance with C.T.
Patterson Oil Co.'s No. 21 fee, NW SW SE Sec. 17-46n-63w. Drlg. below 670 ft.
Wheedon Oil Co.'s No. 5 State, NW SW SE Sec. 16-46n-63w. Drlg. 240 ft.
Gose Oil Synd.'s No. 1, NE NE NE Sec. 28-47n-63w. Drlg. 4,963 ft.
Bruce C. Teeter's No. 1 State, C SW NE Sec. 36-32n-61w. T.D. 2,270 ft.; P.B. and tstg. upper horizon.

MONTANA

Big Horn County

Big Horn O. & G. Dev. Co.'s No. 43, NE NW SW Sec. 15-1s-33e, Hardin dist. R.U.

Blaine County

F. J. Buscher's No. 1 Evey, C NE SE Sec. 12-32n-17e. S.D. 61 ft.

Choteau County

Security Pet. Corp.'s No. 1 Johnson, C NE NE Sec. 23-26n-3e. T.D. 2,091 ft.; 6⅝-in. set at 1,987 ft.; C.O. to bttm.; S.O.; prep. to D.D. to Madison.

Fallon County

Montana-Dakota Utilities Co.'s No. 140, SE NW NE Sec. 24-9n-58e, Cedar Creek dist. Loc.

Fergus County

C. E. Emmons et al's No. 3, CWL NW NW Sec. 5-21n-18e, Winifred dist. Drlg. Claggett sh. at 80 ft.

Glacier County

Cut Bank had one completion in the Glacier Production Co.'s No. 5 Miller, C SW NE Section 32-33n-5w, which swabbed 190 bbl. the first 24 hours at 2,963 ft., total depth, from the Cut Bank sand at 2,905-62 ft. The main pay was at 2,940-62 ft. The Sunburst at 2,870-80 ft. was dry.

Texas Co.'s No. 2 Unit 11, SE NW Sec. 11-35n-6w. Drlg. 130 ft.
Glacier Prod. Co.'s No. 3 Whetstone, C SE NW Sec. 8-33n-5w. Drlg. 985 ft.; Colo. 485 ft.; 10¾-in. cmtd. at 532 ft.
Glacier Prod. Co.'s No. 5 Bonnet, C NW SE Sec. 4-32n-5w. S.D. 115 ft.
Texas Co.'s No. 5 State, C NE NE Sec. 16-32n-5w. Drlg. 615 ft.
Texas Co.'s No. 5 Curran, C NW SE Sec. 8-32n-5w. Drlg. 230 ft.
A. Kately's No. 1 Kramer, NE SE NE Sec. 15-34n-6w. Drlg. 1,600 ft.
Castle-Pardee's No. 2 Tarrant-Corriguex, SE NE NE Sec. 2-33n-6w. R.U.
Santa Rita O. & G. Co.'s No. 5 Lander, NE SW SE Sec. 16-35n-6w. Drlg. 2,000 ft.
Consolidated Gas Co.'s No. 2 Frary-Tribal-172, NW NW NW Sec. 18-32n-5w. Drlg. 2,710 ft.
Santa Rita O. & G. Co.'s No. 4-A Govt., C SE NE Sec. 8-32n-5w. Drlg. 2,820 ft.
Texas Co.'s No. 4 Tweedy, C SE NW Sec. 21-35n-6w. T.D. 2,555 ft.; fsg.
A. B. Cobb's No. 5 Van Demark, CSL SE NE Sec. 35-35n-6w. Drlg. 2,000 ft.
Helmac, Tr.'s No. 3 Govt., Lot 3, Sec. 32-33n-5w. Drlg. 1,600 ft.
Cobb-Reagan's No. 4 Jackson, SW SW SE Sec. 5-32n-6w. R.U.R.

Petroleum County

H. Clark Rowland's No. 1 Brundige-Mink, NE SE NW Sec. 35-14n-25e. T.D. 722 ft.; 8⅝-in. on bttm.; prep. to res.
Watson Oil Co.'s No. 1 Austed, SW NW SE Sec. 22-13n-28e. T.D. 1,540 ft.; C.O. at 1,450 ft.

Pondera County

Ted Hawley's No. 3 State, NW SE SE Sec. 16-27n-4w. Drlg. 1,140 ft.

Toole County

Kevin-Sunburst had one completion in M. F. Teles' No. 1 Blumberg, 220 ft. out of the NE cor. Section 32-35n-3w, which pumped 10 bbl. per day naturally from the contact at 1,699-1,700 ft., which is also the total depth. There was one new operation.

Big West Oil Co.'s No. 2 Ellingsen, CWL SE SW Sec. 14-35n-3w. Drlg. 520 ft.
G. & A. Oil Co.'s No. 4 Goeddertz, C SE NW Sec. 16-35n-3w. Drlg. 1,265 ft.
Henry Vander Pas' No. 4 Cedar Creek, CWL SW SE Sec. 31-35n-1w, S.D. 420 ft.; (cor.).
Coolidge & Coolidge's No. 8 Shaw, NW NE NE Sec. 35-36n-2w. T.D. 1,558 ft.; Sunburst 1,530-58 ft.; 200 ft. O.I.H.
Rimrock Oil Co.'s No. 5 Schmidt, SW SE NW Sec. 29-35n-3w. T.D. 1,789 ft.; cont. dry at 1,789-92 ft.; 15 B. O.P.D. in break; will acd.
S. V. Day's No. 1 Halter, C NE SE Sec. 17-35n-2w. S.D. 540 ft.
Fulton Pet. Co.'s No. 4 Thompson, CNL SW NE Sec. 28-35n-3w. Drlg. 1,140 ft.
Prevol & Shay's No. 6 Govt., NE NW SW Sec. 11-35n-3w. R.O.G.
Crumley & Son's No. 18 Fryberger, CEL SE SW Sec. 24-35n-3w. T.D. 1,579 ft.; contact 1,565-79 ft.; good S.O.; will acd.
A. Beardslee's No. 13 Swears, CEL SE NW Sec. 9-35n-2w. T.D. 1,650 ft.; contact 1,643-47 ft.; 350 ft. O.I.H.; rng. tbg. to acd.
G. H. Lund's No. 1 Dahlen, C SE NW Sec. 35-35n-4w. T.D. 2,185 ft.; wtr. 2,183-85 ft.; will try sqz. job.
R. G. Parrant's No. 1 Holbrook, C NW NE Sec. 2-36n-3w. S.D. 1,400 ft.
Prevol & Shay's No. 5 Govt., SE NW SW Sec. 11-35n-3w. S.D. 1,845 ft.
Casper T. Olen's No. 9 Engemoen, NW NE NW Sec. 14-35n-2w. S.D. 70 ft.
Lemac Oil Co.'s No. 1, C NE NE Sec. 27-36n-2w. S.D. 1,906 ft.
Morton & Shaw's No. 2 Ellingson, SE NE NW Sec. 23-35n-3w. T.D. 1,734 ft.; contact 1,720-24 ft.; 1,000 ft. O.I.H.; tstg.
Frazer & Smith's No. 2 Van Note, NE SW NW Sec. 30-35n-2w. Drlg. 1,430 ft.

UTAH

Daggett County

Mountain Fuel Supply Co.'s No. 1 Govt., SE NE NE Sec. 19-3n-24e. R.U.R.

Grand County

Reeder Corp.'s No. 1 State, NE NE NE Sec. 16-22s-19e. Drlg. 1,060 ft.

Summit County

Longwell Pet. Co.'s No. 1, SE SW SE Sec. 35-3n-5e. T.D. 3,274 ft.; tstg. S.O. in sd. at 3,256-74 ft.

SOUTH DAKOTA

Butte County

Two Top O. & G. Co.'s No. 2, SE NE Sec. 30-10n-6e. Drlg. 2,600 ft.

WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well, location, and county—	S.	T.R.	Depth	Status
Union Oil, No. 1 Austin, Dominguez, L. A.	32-	3-13	5,050	sd. sh. drig.
Shell Oil, No. 103 Reyes, Dominguez, L. A.	33-	3-13	4,250	flow 695 b.d.
Shell Oil, No. 104 Reyes, Dominguez, L. A.	33-	3-13	1,001	sd. sh. drig.
Havenstrite, R. E., No. 3 Larronde, Dominguez, L. A.	32-	3-13	6,740	sd. sh. drig.
Seaport Oil, No. 1 Dasteel, Dominguez, L. A.	32-	3-13	7,251	sd. sh. drig.
Apex Pet., No. 1 Hatfield, Rosecrans, L. A.	20-	3-13	8,700	P.B. 8,655
Mission Oil, No. 1 Pierce, Rosecrans, L. A.	20-	3-13	5,462	sd. sh. drig.
So. Cal. Pet., No. 2 Slabaugh, Rosecrans, L. A.	20-	3-13	7,190	sd. sh. drig.
St. Anthony Oil, No. 3 Gordon, Rosecrans, L. A.	19-	3-13	7,720	O.S. drig.
Union Oil, No. 40 Rosecrans, Rosecrans, L. A.	19-	3-13	8,118	completing
Union Oil, No. 41 Rosecrans, Rosecrans, L. A.	19-	3-13	7,383	sd. sh. drig.
Howard Oil, No. 2 Byrens, Rosecrans, L. A.	20-	3-13	7,170	sd. sh. drig.
Royalty Service, No. 1 Cement, Rosecrans, L. A.	20-	3-13	9,148	rig to pump
Kelly & Sons, No. 2 McMillen, Rosecrans, L. A.	20-	3-13	7,761	flow 290 b.d.
Chicago Oil, No. 1 Founders, Rosecrans, L. A.	20-	3-13	4,983	sd. sh. drig.
Thorley Oil, No. 1 Athens, Rosecrans, L. A.	7-	3-13	4,680	sd. sh. drig.
El Rey Oil, No. 1 Westmore, Athens, L. A.	2-	3-14	9,063	P.B. 9,000
Federal Oil, No. 1 Smith, Inglewood, L. A.	7-	2-14	1,688	sd. sh. drig.
Vanguard Oil, No. 1 L.A.I., Centinella, L. A.	29-	2-14	1,102	idle
Turf Oil, No. 1 H.R.A., Potrero, L. A.	34-	2-14	7,330	sd. sh. drig.
Tide Water A. O., No. 13 Porter, Aliso Canyon, L. A.	27-	3-16	4,740	O.S. drig.
Tide Water A. O., No. 15 Porter, Aliso Canyon, L. A.	27-	3-16	1,570	sd. sh. drig.
Tide Water A. O., No. 22 Porter, Aliso Canyon, L. A.	27-	3-16	1,460	sd. sh. drig.
Brit. Amer. Oil, No. 1 Perkins, Newhall, L. A.	14-	3-16	4,660	rigging up
Creighton-Hammon Synd., No. 1 C-H, Newhall, L. A.	17-	3-16	191	sd. sh. drig.
Barnsdall Oil, No. 9 R.S.F., Newhall, L. A.	27-	4-17	7,195	C.P. 6,993
Barnsdall Oil, No. 10 R.S.F., Newhall, L. A.	26-	4-17	7,095	O.S. drig.
General Pet., No. 2 P.E., Wilmington, L. A.	35-	4-13	4,120	P.B. 3,705
Continental Corp., No. 5 L.A.C.F.C., Wilmington, L.A.	2-	5-13	3,500	O.S. drig.
Hancock Oil, No. 27-A Harbor, Wilmington, L. A.	35-	4-13	4,050	O.S. drig.
Long Beach Dev., No. 12-W Harbor, Wilmington, L.A.	10-	5-13	3,948	P.B. 3,913
M. A. K. Pet., No. 1 Harbor, Wilmington, L. A.	35-	4-13	3,125	sd. sh. drig.
Union Pacific R. R., No. 131, Wilmington, L. A.	3-	5-13	5,297	flow 250 b.d.
Union Pacific R. R., No. 133, Wilmington, L. A.	3-	5-13	4,020	flow 717 b.d.
Union Pacific R. R., No. 135, Wilmington, L. A.	4-	5-13	5,610	flow 672 b.d.
Union Pacific R. R., No. 136, Wilmington, L. A.	3-	5-13	3,940	sd. sh. drig.
Union Pacific R. R., No. 138, Wilmington, L. A.	3-	5-13	1,180	sd. sh. drig.
Union Pacific R. R., No. 139, Wilmington, L. A.	3-	5-13	4,950	C.P. 3,810
Union Pacific R. R., No. 140, Wilmington, L. A.	4-	5-13	1,955	sd. sh. drig.
Union Pacific R. R., No. 141, Wilmington, L. A.	3-	5-13	2,681	sd. sh. drig.
Union Pacific R. R., No. 23-E, Wilmington, L. A.	3-	5-13	3,765	P.B. 3,705
Union Pacific R. R., No. 6-P.D., Wilmington, L. A.	3-	5-13	2,584	sd. sh. drig.
Wilton Oil, No. 55-6-F, Wilmington, L. A.	32-	4-13	3,696	flow 540 b.d.
Kern Oil, No. 30 Monterey, Montebello, L. A.	2-	2-12	7,760	sd. sh. drig.
Kern Oil, No. 34 Monterey, Montebello, L. A.	2-	2-12	7,805	will deepen
Kern Oil, No. 5 Mulholland, Montebello, L. A.	2-	2-12	7,641	will deepen
Kern Oil, No. 3 Eggleston, Montebello, L. A.	2-	2-12	7,282	sd. sh. drig.
Brookline Oil, No. 1 Drake, Montebello, L. A.	2-	2-12	7,769	O.S. drig.
C. A. P. Oil, No. 1 Dutch, Montebello, L. A.	11-	2-12	7,657	idle
Chemical Oil, No. 1 Chemiculture, Montebello, L. A.	12-	2-12	3,292	sd. sh. drig.
Columbia Oil, No. 1 Schelnik, Montebello, L. A.	3-	2-12	8,154	P.B. 7,706
Getty-Pac. West., No. 1 Star, Montebello, L. A.	10-	2-12	7,603	completing
Herley-Kelly, No. 1 Masser, Montebello, L. A.	2-	2-12	7,710	completing
Mabee Co., No. 39 Monterey, Montebello, L. A.	2-	2-12	7,740	flow 595 b.d.
Mabee Co., No. 43 Monterey, Montebello, L. A.	2-	2-12	7,888	looks good
Mono Oil, No. 1 Foreman, Montebello, L. A.	2-	2-12	7,840	P.B. 7,710
Montebello Oil, No. 2 Wallace, Montebello, L. A.	3-	2-12	6,570	sd. sh. drig.
Mont. Reservoir Oil, No. 2 Mont., Montebello, L. A.	2-	2-12	7,612	redrig. 7,098
Texas Co., No. 4 Wilcox, Montebello, L. A.	3-	2-12	7,476	sd. sh. drig.
United Mont. Oil, No. 3 Mont., Montebello, L. A.	11-	2-12	7,942	P.B. 7,680
Winlock Oil, No. 1 Win, Montebello, L. A.	11-	2-12	7,590	idle
Allied Pet., No. 34 Signal, Long Beach, L. A.	30-	4-12	10,290	O.S. drig.
Unity Oil, No. 1 Donna, Long Beach, L. A.	24-	4-13	3,649	pump 155 b.d.
Convoy Oil, No. 1-A Signal, Long Beach, L. A.	24-	4-13	3,590	sd. sh. drig.
Sunset Oil, No. 2 Whitney, Long Beach, L. A.	19-	4-12	3,620	tested wet
Dormax Oil, No. 2 Signal, Long Beach, L. A.	30-	4-12	4,211	fish D.P.
Exeter Oil, No. 3 Olson, Long Beach, L. A.	19-	4-12	4,597	cleaning out
Dunlap, D. D., No. 15 Signal, Long Beach, L. A.	19-	4-12	2,755	cleaning out
McKeon, John, No. 3 Oil Excg., Long Beach, L. A.	19-	4-12	1,760	sd. sh. drig.
Tucker, H. M., No. 1 Heath, Buena Park, Orange	34-	3-11	4,691	sd. sh. drig.
Sonwell Oil, No. 2 Coyote, East Coyote, Orange	13-	3-10	3,307	cmtd. 2,950
Standard Oil, No. 69 Emery, West Coyote, Orange	24-	3-11	5,230	O.S. drig.
Southwest Expl., No. 27 State, Hunt. Beach, Orange	10-	6-11	3,371	sd. sh. drig.
Clear View Oil, No. 1 Williams, Hunt. Beach, Orange	36-	5-11	4,286	pump 75 b.d.
Owens & Baker, No. 1 Newland, Hunt. Beach, Orange	36-	5-11	3,002	sd. sh. drig.
Termo Co., No. 409-4 State, Hunt. Beach, Orange	10-	6-11	4,719	will whipstock
South Basin Oil, No. 93 H.B., Hunt. Beach, Orange	2-	6-11	7,590	redrig. 2,703
United Oil, No. 1 Schimming, Stanton, Orange	25-	4-11	7,590	sd. sh. drig.

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well, location, and county—	S.	T.R.	Depth	Status
Cole, F. E., No. 1 Giacomini, Santa Maria, Santa Barb.	24-	10-35	4,806	sd. sh. drig.
Union Oil, No. 1 Pezzoni, Betteravia, Santa Barbara	33-	10-35	1,188	sd. sh. drig.
Union Oil, No. 18 Cal-Coast, Santa Maria, Santa Barb.	26-	9-34	4,160	pump 45 b.d.
Republic Pet., No. 2 Hollister, Gaviota, Santa Barb.	36-	5-33	3,200	rigging up
Texas Co., No. 139 Shiells, Shiells Canyon, Ventura	4-	3-19	2,874	sd. sh. drig.
Rio Hondo Oil, No. 1 Cosby, Hopper Canyon, Ventura	14-	4-19	1,205	circulating
Merchants Pet., No. 8 Cochran, Sespe, Ventura	1-	4-20	2,210	sd. sh. drig.
Continental Oil, No. 16 Grubb, San Miguelito, Vent.	24-	3-24	4,660	sd. sh. drig.
C. C. M. Oil, No. 14-B Hobson, Rincon, Ventura	17-	3-24	4,400	cleaning out
C. C. M. Oil, No. 31-B Hobson, Rincon, Ventura	17-	3-24	4,009	flow 385 b.d.
C. C. M. Oil, No. 9-A Hobson, Rincon, Ventura	15-	3-24	6,515	swab. 80 b.d.
Tide Water A. O., No. 45 V.L.W., Vent. Ave., Vent.	23-	3-23	9,930	flow 3,165 b.d.
Tide Water A. O., No. 46 V.L.W., Vent. Ave., Vent.	24-	3-23	1,981	sd. sh. drig.
Tide Water A. O., No. 17 McGonigle, Vent. Ave., Vent.	23-	3-23	8,090	sd. sh. drig.
Tide Water A. O., No. 119 Lloyd, Vent. Ave., Vent.	27-	3-23	8,550	cmtd. 8,550
Tide Water A. O., No. 18 Hartman, Vent. Ave., Vent.	22-	3-23	10,885	redrig. 10,885
Tide Water A. O., No. 22 Hartman, Vent. Ave., Vent.	22-	3-23	7,270	sd. sh. drig.
Tide Water A. O., No. 25 Hartman, Vent. Ave., Vent.	22-	3-23	6,655	sd. sh. drig.
Shell Oil, No. 55 Taylor, Ventura Ave., Ventura	28-	3-23	6,667	flow 492 b.d.
Shell Oil, No. 116 Taylor, Ventura Ave., Ventura	29-	3-23	297	sd. sh. drig.
Shell Oil, No. 117 Taylor, Ventura Ave., Ventura	21-	3-23	5,696	sd. sh. drig.
Shell Oil, No. 118 Taylor, Ventura Ave., Ventura	29-	3-23	6,551	sd. sh. drig.
Cal. Alliance Pet., No. 2 Hartman, Vent. Ave., Vent.	22-	3-23	9,425	tested wet
Cal. Alliance Pet., No. 1 Schmidt, Vent. Ave., Vent.	21-	3-23	6,592	sd. sh. drig.
British American Oil, No. 1 Barn., Vent. Ave., Vent.	22-	3-23	5,960	sd. sh. drig.
British American Oil, No. 10 Hart, Vent. Ave., Vent.	21-	3-23	3,052	sd. sh. drig.
Lloyd Corp., No. 5 Dabney, Ventura Ave., Ventura	24-	3-23	4,663	sd. sh. drig.
Trigg, H. C., No. 1 Den, Devil's Den, Kern	11-	25-18	496	dry; abd.
General Pet., No. 1 K.P.C., Lost Hills, Kern	16-	26-22	2,897	sd. sh. drig.
Franco-Western Oil, No. 18 Front, McKittrick, Kern	8-	30-22	2,237	rig to pump
Mid-State Pet., No. 1 Welport, McKittrick, Kern	26-	29-21	1,214	pump 10 b.d.
Union Oil, No. 1 Weston, Belridge, Kern	13-	29-21	7,120	sd. sh. drig.
Belridge Oil, No. 10-1 fee, North Belridge, Kern	1-	28-20	1,976	sd. sh. drig.
Continental Oil, No. 4 Result, North Belridge, Kern	36-	27-20	5,710	will deepen
Texas Co., No. 1 Theta, Shale Hills, Kern	12-	28-19	3,395	redrig. 3,196
Yeager, A. T., No. 3 Murdock, Mount Poso, Kern	34-	27-28	1,680	tested wet
Ring Oil, No. 6 Rodgers, Mount Poso, Kern	29-	26-28	1,855	Vedder wet
Vedder Pet., No. 31-2 Lambert, Mount Poso, Kern	31-	26-28	2,746	gr. sd. drig.
Premier Extension Oil, No. 1 South, Jasmine, Kern	33-	25-27	3,088	dry; abd.
McDonald & Dearin, No. 5 Kernco, Kern Front, Kern	11-	28-27	1,787	sd. sh. drig.
Dick & Dore Oil, No. 27 Kern, Kern River, Kern	34-	28-28	632	rig to pump
Dick & Dore Oil, No. 30 Kern, Kern River, Kern	34-	28-28	361	sd. sh. drig.
Dick & Dore Oil, No. 31 Kern, Kern River, Kern	34-	28-28	490	reaming
Helm & Smith, No. 21 Kern, Kern River, Kern	34-	28-28	684	rig to pump
Richards Oil, No. 13 Davis, Kern River, Kern	8-	29-28	179	sd. sh. drig.
Sleeper Ridge Oil, No. 1 Ridge, Kern River, Kern	15-	29-28	2,490	sd. sh. drig.
Crestmont Oil, No. 3 Coffer, Round Mountain, Kern	8-	28-29	180	sd. sh. drig.
Grizzly Bear Oil, No. 4 Kelly, Round Mountain, Kern	6-	28-29	1,815	idle
Goodrum & Vincent, No. 4 S.P., Edison, Kern	31-	29-30	515	pump 10 b.d.
Morton, L. C., No. 1 Jewett, Arvin, Kern	23-	31-29	6,190	sd. sh. drig.
Western Gulf Oil, No. 45-B, KCL, Fruitvale, Kern	22-	29-27	10,450	gr. sd. drig.
Standard Oil, No. 4 Mushrush, Wasco, Kern	7-	27-24	13,135	completing
Continental Oil, No. 1 Meyer, Wasco, Kern	7-	27-24	13,138	completing
Continental Oil, No. 1 Community, Shafter, Kern	12-	28-24	13,028	will abdn.
Union Oil, No. 32-34, KCL, Rio Bravo, Kern	34-	28-25	11,470	flow 1,350 b.d.
Union Oil, No. 45-34, KCL, Rio Bravo, Kern	34-	28-25	9,006	sd. sh. drig.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Acd., acidized.
B.O., barrels of oil.
B.P.D., barrels per day.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
B. ck., bottom choke.
Br. sh., brown shale.
B.S., basic sediment.
C.&P., cellar and pits.
Cd. or Crd., cored.
C.D., correct depth.
Cg., coring.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg., or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.S.T., drill-stem test.
D.P., drill pipe.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging back.
P.B.P., pulling or pulled big pipe.
P.L., pipe line.
P.L.O., pipe-line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Recvd., recovered.
Rmg., reaming.
Redrig., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtrk. or St., sidetracked.
S.D.P.L., shut down for pipe line.
S.D.O., or S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel-line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas, and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing)
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T. ck., top choke.
T.P., tubing pressure.
Tr., tract.
Tstd., tested.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting on cement to set.
W.O.O., waiting on orders.
W.P., working pressure.
W.S.O., water shutoff.
W.S.O.O.K., water shutoff O.K.
W.S.R. or W.O.S.R., awaiting standard rig
Wtr., water.

Union Oil, No. 54-34, KCL, Rio Bravo, Kern	34-28-25	10,100	sd. sh. drlg.
Superior Oil, No. 3 Fink, Rio Bravo, Kern	28-28-25	11,498	flow 1,524 b.d.
Superior Oil, No. 3 Burner, Rio Bravo, Kern	27-28-25	8,680	sd. sh. drlg.
Superior Oil, No. 2 Weber, Rio Bravo, Kern	27-28-25	11,450	O.S. drlg.
Superior Oil, No. 1 Merrill, Greeley, Kern	1-29-25	9,683	sd. sh. drlg.
Standard Oil, No. 11-22, KCL, Greeley, Kern	18-29-26	7,091	sd. sh. drlg.
Standard Oil, No. 12-8, KCL, Greeley, Kern	7-29-26	11,260	sd. sh. drlg.
Standard Oil, No. 12-9, KCL, Greeley, Kern	7-29-26	3,151	sd. sh. drlg.
General Pet., No. 1 Oughton, Greeley, Kern	12-29-25	10,391	hd. sh. drlg.
General Pet., No. 2 Sullivan, Greeley, Kern	12-29-25	10,980	hd. sh. drlg.
Shell Oil, No. 76-29-A, KCL, Ten Section, Kern	29-30-26	8,209	O.S. drlg.
Shell Oil, No. 38-30-B, KCL, Ten Section, Kern	30-30-26	8,220	flow 1,000 b.d.
Shell Oil, No. 41-31-B, KCL, Ten Section, Kern	31-30-26	6,890	sd. sh. drlg.
Shell Oil, No. 86-12-B, KCL, Strand, Kern	12-30-25	8,140	sd. sh. drlg.
Ohio Oil, No. 19-E, KCL, Canal, Kern	13-30-25	6,660	sd. sh. drlg.
Richfield Oil, No. 18-28-A, KCL, Tupman, Kern	28-30-25	1,855	sd. sh. drlg.
Richfield Oil, No. 38-28-A, KCL, Tupman, Kern	28-30-25	8,790	O.S. drlg.
Richfield Oil, No. 58-28-A, KCL, Tupman, Kern	28-30-25	4,883	sd. sh. drlg.
Richfield Oil, No. 78-30-A, KCL, Tupman, Kern	30-30-25	4,691	sd. sh. drlg.
Richfield Oil, No. 74-32-A, KCL, Tupman, Kern	32-30-25	9,011	flow 2,162 b.d.
Richfield Oil, No. 18-33-A, KCL, Tupman, Kern	33-30-25	4,755	sd. sh. drlg.
Richfield Oil, No. 52-33-A, KCL, Tupman, Kern	33-30-25	2,998	sd. sh. drlg.
Richfield Oil, No. 78-29-A, KCL, Tupman, Kern	29-30-25	8,920	flow 1,090 b.d.
Richfield Oil, No. 276-29-A, KCL, Tupman, Kern	29-30-25	7,965	sd. sh. drlg.
Richfield Oil, No. 12-3-C, KCL, Cole's Levee, Kern	3-31-25	9,760	hd. sh. drlg.
Richfield Oil, No. 54-4-B, KCL, Cole's Levee, Kern	4-31-25	6,080	sd. sh. drlg.
Standard Oil, No. 20-5, KCL, Cole's Levee, Kern	9-31-25	7,375	sd. sh. drlg.
Ohio Oil, No. 8-F, KCL, Cole's Levee, Kern	11-31-25	8,990	sd. sh. drlg.
Foster, Robert, No. 1 Hollingsworth, Md.-Sun., Kern	22-32-23	1,567	sd. sh. drlg.
Signal Oil & Gas, No. 7 Kendon, Md.-Sun., Kern	35-32-23	2,505	pump 110 b.d.
Signal Oil & Gas, No. 8 Kendon, Md.-Sun., Kern	35-32-23	1,266	sd. sh. drlg.
Shell Oil, No. 45-9 B.V.A., Midway-Sunset, Kern	9-32-25	11,780	hd. sd. drlg.
McDonald, Joseph, No. 20 Midway, Mdwy.-Sun., Kern	26-31-22	860	sd. sh. drlg.
Ohio Oil, No. 43-3-B, KCL, Paloma, Kern	3-32-26	10,361	fish D.P.
Western Gulf-Texas, No. 74-3-A, KCL, Paloma, Kern	3-32-26	10,700	C.P. 10,085
Richfield Oil, No. 1 Ranch, Tejon Ranch, Kern	2-10-19	4,591	hd. sh. drlg.
Richfield Oil, No. 2 KCL, Wheeler Ridge, Kern	28-11-20	1,298	hd. sd. drlg.
Erickson & Swanson, No. 2 Gravender, Ksbrg., Fres.	22-16-22	642	hd. sh. rdlg.
Logan, J. E., No. 44 Yearout, Cantua, Fresno	26-16-14	1,502	sd. sh. drlg.
Jergins Trust, No. 1 Cheney, Panoche Creek, Fresno	29-14-13	8,411	sd. sh. drlg.
Texas Co., No. 1 S.P., Turk anticline, Fresno	23-17-15	10,114	testing
Shell Oil, No. 45-2, East Coalinga, Fresno	2-20-15	2,981	sd. sh. drlg.
Standard Oil, No. 53-19-B fee, N.E. Coalinga, Fresno	19-19-16	7,891	br. sh. drlg.
Standard Oil, No. 68-19-B fee, N.E. Coalinga, Fresno	19-19-16	7,660	br. sh. drlg.
Standard Oil, No. 82-19-B fee, N.E. Coalinga, Fresno	19-19-16	7,481	br. sh. drlg.
Amerada Pet., No. 1-20-B Ewing, N.E. Coalinga, Fres.	20-19-16	8,060	sd. sh. drlg.
Texas Co., No. 5-20-B Kimberlin, N.E. Coalinga, Fres.	20-19-16	8,003	br. sh. drlg.
Superior Oil, No. 5 Husong, N.E. Coalinga, Fresno	18-19-16	5,993	sd. sh. drlg.
Pure Oil, No. 44-30-B, N.E. Coalinga, Fresno	30-19-16	7,080	cleaning out
Wilshire Oil, No. 62-30-B, N.E. Coalinga, Fresno	30-19-16	7,070	sd. sh. drlg.
Bandini Pet., No. 71-30-B, N.E. Coalinga, Fresno	30-19-16	6,250	sd. sh. drlg.
Lytle, R. S., Agent, No. 35-18-F, S.E. Coalinga, Fresno	18-20-16	7,070	br. sh. drlg.
Lytle, R. S., Agent, No. 48-18-F, S.E. Coalinga, Fresno	18-20-16	7,909	O.S. drlg.
Lytle, R. S., Agent, No. 68-18-F, S.E. Coalinga, Fresno	18-20-16	7,430	br. sh. drlg.
Univ. Cons'd Oil, No. 72-24-C, S.E. Coalinga, Fresno	24-20-15	3,987	sd. sh. drlg.
Standard Oil, No. 88-13-C fee, S.E. Coalinga, Fresno	13-20-15	6,030	sd. sh. drlg.
Standard Oil, No. 22-17-F fee, S.E. Coalinga, Fresno	17-20-16	3,553	sd. sh. drlg.
Standard Oil, No. 1-19-F fee, S.E. Coalinga, Fresno	19-20-16	5,654	sd. sh. drlg.
Standard Oil, No. 22-19-F fee, S.E. Coalinga, Fresno	19-20-16	8,051	P.B. 7,825
Standard Oil, No. 33-19-F fee, S.E. Coalinga, Fresno	19-20-16	7,698	recmtd. 7,633
Standard Oil, No. 42-19-F fee, S.E. Coalinga, Fresno	19-20-16	8,029	P.B. 7,900
Superior Oil, No. 3-B Cagle, S.E. Coalinga, Fresno	6-20-16	6,992	sd. sh. drlg.
Union Oil, No. 9 King, Kettleman N. Dome, Fresno	29-21-17	9,196	sd. sh. drlg.
K. N. D. A., No. 322-18-J, Kettleman N. Dome, Fresno	18-21-17	6,730	sd. sh. drlg.
K. N. D. A., No. 334-18-J, Kettleman N. Dome, Fresno	18-21-17	10,905	flow 1,560 b.d.
K. N. D. A., No. 4-16-Q, Kettleman N. Dome, Fresno	16-22-18	7,800	sd. sh. drlg.
K. N. D. A., No. 38-26-Q, Kettleman N. Dome, Kings	26-22-18	8,368	P.B. 8,035
K. N. D. A., No. 58-26-Q, Kettleman N. Dome, Kings	26-22-18	2,961	sd. sh. drlg.
Standard Oil, No. 321-29-J, Kettleman N. Dome, Fres.	29-21-17	10,140	hd. sh. drlg.
Standard Oil, No. 334-29-J, Kettleman N. Dome, Fres.	29-21-17	7,542	sd. sh. drlg.
Standard Oil, No. 57-3-P, Kettleman N. Dome, Kings	3-22-17	8,525	flow 330 b.d.
Standard Oil, No. 41-27-Q, Kettleman N. Dome, Kings	27-22-18	8,115	recmtd.
Standard Oil, No. 63-27-Q, Kettleman N. Dome, Kings	27-22-18	8,200	cleaning out
Standard Oil, No. 72-27-Q, Kettleman N. Dome, Kings	27-22-18	8,040	completing
Standard Oil, No. 85-27-Q, Kettleman N. Dome, Kings	27-22-18	8,075	recmtd. 7,637
Standard Oil, No. 41-35-Q, Kettleman N. Dome, Kings	35-22-18	8,190	reaming
Bristol Oil, No. 1 Smith, Kettleman S. Dome, Kings	35-24-19	8,054	bail water
Shell Oil, No. 1 Cohn, Tulare Lake, Kings	4-22-19	11,870	gr. sd. drlg.
Holly Dev., No. 1 Meherin, Huasna, San Luis Ob.	7-32-13	3,870	sd. sh. drlg.
Cal. Fuel Oil, No. 3 Alberta, Huasna, San Luis Ob.	5-32-13	1,260	sd. sh. drlg.
Amerada Pet., No. 1 Carpenter, Rio Vista, Solano	20- 4- 3	3,698	sd. sh. drlg.
Calaveras Co., No. 1 Elliott, Rio Vista, Solano	30- 4- 3	3,087	sd. sh. drlg.
Tassajara Oil, No. 1 Rasmussen, Tass., Contra Costa	9- 2- 1	9,777	P.B. 5,640

OKLAHOMA

Week Ended May 4

NORTHERN OKLAHOMA

Beckham County

Fred Coogan's No. 1 Kinchen, SE SE SE Sec. 4-9-25w. Dolo. 3,260 ft.; T.D. 3,714 ft.; P.B. 3,706 ft.; W.I.H.

Caddo County

Sinclair Prairie Oil Co.'s No. 1 Groman, SW NW NW Sec. 1-16-13w, Wlx. 9,179 ft.; sd. 10,074 ft.; cd. 10,871-75 ft.; N. S.; Arb. 10,922 ft.; T.D. 11,026 ft.; P.B. 9,370 ft.; bld. dry with N.S.

Creek County

Indo Oil Co.'s No. 1 Slick, NW NW NW Sec. 1-16-9. S.O. 1,145-78 ft.; drlg. 1,626 ft.

Dewey County

Magnolia Pet. Co.'s No. 1 Fiekes. C SW SW Sec. 31-18-14w. D.S.T. rec. mud at 7,718 ft.; T.D. 9,475 ft.; rng. csg. to shut off gas.

Garfield County

Champlin Ref. Co.'s No. 1 Kunkel, C E½ SE NW Sec. 23-23-6w. W.O.C. 230 ft.

Hughes County

J. W. Boydston's No. 1 Robstein, C NW SE Sec. 11-6-9. S.D. 1,014 ft.

Hall & Jordan's No. 1-A Barker, SE SE SW Sec. 3-8-9. S.O. in sd. 2,074 ft.; T. D. 2,109 ft.; est. 2 B.O.; S.D.

Southwestern Drlg. Co.'s No. 1 Diamond, C E½ NW SE Sec. 33-9-9. Drlg. 2,690 ft.

Kay County

Malarnee Oil Co.'s No. 1 Harris, C SW NE Sec. 14-25-1. Miss. 4,050 ft.; chat with S.O. 4,063-4,105 ft.; fsg. 4,300 ft., T.D.

Kingfisher County

Olsen Drlg. Co.'s No. 1 Geis, C NE SW Sec. 15-18-9w; (O.W.D.D.). O.T.D. 8,507 ft.; S.D. 9,318 ft.; reprs.; N.S.

Phillips Pet. Co.'s No. 1 Drape, C NW SE Sec. 30-18-5w. Layton 5,600 ft.; O.S.W. 6,146 ft.; drlg. 6,420 ft.

Kiowa County

Frank Dillard et al's No. 1 Hobbs, SE SE NW Sec. 35-6-17w. Set 6⅝-in. 525 ft.; T.D. 690 ft.

J. M. Henry's No. 1 Huff, SW SW NW Sec. 32-7-18w. Gas 1,512-1,704 ft., T.D.; D.&A.

C. H. Marshall's No. 1 Pottchin, NE NW NW Sec. 28-7-18w. S.D. 1,940 ft.

Southwestern Okla. O. & G. Co.'s No. 2 Foltz, NW SE SE Sec. 10-6-18w. T.D. 1,085 ft.; S.D.; reprs.

Lincoln County

Fields & Nagle's No. 1 Alspaugh, SW SE NW Sec. 35-15-6. S.D. 785 ft.; reprs.

R. M. Purcell et al's No. 1 Wolcott, NW NW NW Sec. 2-13-4e. Abd. loc.

Logan County

Eason Oil Co.'s No. 1 Wells, NE NW NE Sec. 15-16-2w. T.D. 310 ft.

Kerlyn Oil Co.'s No. 1 Cavanaugh, C W½ SW NW Sec. 1-15-4w. T.D. 333 ft.

Kerlyn Oil Co.'s No. 1 Chitwood, NE NE SW Sec. 15-16-4w. Drlg. 4,076 ft.

McIntosh County

Phillips' No. 1 Blankenship, C SW NW Sec. 33-10-13. Drlg. 3,610 ft.

Muskogee County

R. Garrett's No. 1 Escoe, SW SW SE Sec. 16-13-17. S.D. 1,665 ft.; est. 2,000,000 cu. ft. gas.

Noble County

Alladdin Pet. Co.'s No. 1 Wentz, C W½ NE SW Sec. 11-22-2. Drlg. 4,120 ft.

Okfuskee County

Burke-Greis' No. 1 Dew, NE NE NE Sec. 9-12-9. Drlg. 410 ft.

McIntyre's No. 1 Richardson, NE SW NW Sec. 19-10-8. Drlg. 3,150 ft.

C. A. Yoakum's No. 1 Long, C SW SE Sec. 34-12-9. T.D. 3,826 ft.; drld. plug; rec. 10,000,000 cu. ft. gas.

C. A. Yoakum's No. 1-A Replogle-Johnson, NW NW NE Sec. 11-11-10. F. 135 bbl. in 20 hrs.; S.I. and F. 102 bbl. in 14 hrs.

Okmulgee County

B. H. Young's No. 1 Miller, NW SW NE Sec. 6-15-14. T.D. 1,056 ft.; H.F.W. D.&A.

Payne County

Comoil-Haskins' No. 1 Meyer, NW SE SE Sec. 17-17-6. U.R. 1,282 ft.

Devonian Oil Co.'s No. 1-A Scott, SE SE NE Sec. 19-18-5. W.O.C. 250 ft.

Pottawatomie County

Alma Oil Co.'s No. 1 Harrington. NW SE NW Sec. 24-9-4. T.D. 4,510 ft.; P.B. 4,430 ft.; perf.; mud and S.S.O.

J. W. Meazel's No. 1 Billington, SE NE NE Sec. 26-9-4. Wlx. 4,473 ft.; T.D. 4,508 ft.; W.O.C.

Simpson-Roodhouse's No. 1 Neal, NW NE SE Sec. 33-6-3. Drlg. 2,190 ft.

Taber et al's No. 1 McKinney, C E½ SE SW Sec. 11-10-4. Drlg. 380 ft.

Seminole County

Edwards & Johnson's No. 1 Long, SE NW NW Sec. 1-6-5. T.D. 3,004 ft.; D. &A.

Elm Oil et al's No. 1 Evans, SE SE NE Sec. 17-10-5. Drlg. 1,800 ft.

Murta et al's No. 1 Harber, C W¼ NE SE Sec. 4-10-6. Crkd. hole; pig. 2,225 ft.

Washita County

Continental Oil Co.'s No. 1 School ld., C NE Sec. 16-8-16w. Gr. wsh. 3,005 ft.; drlg. 5,762 ft.

SOUTHERN OKLAHOMA

Atoka County

Holly et al's No. 1 Johnson, NW NW NE Sec. 36-3s-13. S.D. 800 ft.

Kirksey's No. 1 Baskett, SW SE SE Sec. 7-3s-10e. Sdy. L. 470-80 ft.; S.O.; fsg. 490 ft.

Carter County

W. F. Turner's No. 1 Smith, NE SW SE Sec. 16-3s-1w. S.D. 3,640 ft.

Choctaw County

Clyde Ross et al's No. 1 Hardy, SE SE NW Sec. 21-7s-15. S.D. 1,950 ft.

Jefferson County

Fred Land et al's No. 1 Barrett, NE SE SE Sec. 14-6s-6w. Sd. 1,852 ft., S.O.; D. P. stk. at 1,100 ft.; T.D. 1,890 ft.; S.D.

Marshall County

Johnson et al's No. 1 Godfrey, SW SE NE Sec. 14-6s-6e. Vla. 2,627 ft.; S.S.O.; T.D. 4,582 ft.; P.B. 4,268 ft.; B. dry and made 300 ft. oil and 330 ft. wtr.

May Oil Corp.'s No. 1 Sacrea, SW NE SW Sec. 17-5-5. Sd. and S.G. 1,023-27 ft.; blk. sh. 1,033-37 ft.; gas sd. 1,120-ft.; est. 6,000,000 cu. ft. gas; T.D. 1,132 ft.; W.O.D.P.

Pure Oil's No. 1 Little, W½ NE SE Sec. 28-5s-7e. T.D. 5,640 ft.; F. 283 B.O. in 1 hr.

Stephens County

Edwin Bristow's No. 1 Damron, SE NW SW Sec. 25-2s-6w. T.D. 1,545 ft.; no test; may D.D.

Jackson's No. 1 Marshall, SE NE NE Sec. 1-1s-6w. T.D. 2,000 ft.; N.S.; to M.I. and D.D.

Tillman County

F. W. Johnson's No. 1 Longacre, NE NE SE Sec. 32-25-17w. T.D. 3,268 ft.; F. 170 B.O., 30 B.W.P.D.; gr. 42°; wash bridge and ran jeep.

KANSAS

Week Ended May 4 (Descriptions are East unless marked otherwise)

Barton County

Gulf et al's No. 1 Sander, CNL SW SE Sec. 30-13-16w. W.O.C. 215 ft.

Butler County

Ralph Wixon's No. 3 Bolin, SE SW NE Sec. 1-27-6. Drlg. 500 ft.

Cloud County

E. T. Lindsay et al's No. 1 LeBlanc, C S½ SW NW Sec. 35-6-1w. Drlg. 2,690 ft.

Cowley County

Atlantic and Sinclair's No. 1 Smith, SE SE NW Sec. 33-33-4. Tpka. 1,365 ft.; drlg. 2,785 ft.

Barwick & Sheridan's No. 1 Warren, C W½ NW NW Sec. 18-35-6. Drlg. 785 ft.

C. L. Carlock's No. 1 Starkey, CSL SE SE Sec. 21-30-7. Lans. 1,635 ft.; rng. 6-in. 2,785 ft.

Foster Oil Co.'s No. 2 Howard. E½ SW SW Sec. 8-34-4. S.D. 1,713 ft.

Hartman & Brewer's No. 1 Falkingham CNL NW SE Sec. 22-30-4. Drlg. 2,890 ft.

Hawkeye Oil Co.'s No. 1 Russell, CWL NW SE Sec. 19-30-5. Drlg. 2,697 ft.

McKnab's No. 1 Coats, NE NE NE Sec. 18-34-4. Gas 762-95 ft., T.D.; F. 340,000 cu. ft. gas; comp.

McKnab's No. 1 Sherwood, NE SE SW Sec. 4-35-5. Drlg. 2,639 ft.

McKnab's No. 1 Snyder, C W½ NW NW Sec. 15-34-3. Drlg. 2,185 ft.

Markey & Mission's No. 1-A Hunt, SW SW NE Sec. 16-34-5. T.D. 1,756 ft.; killed gas; U.R. 1,756 ft.

Morgan Pet. Co.'s No. 1 Dunn. CSL SW NE Sec. 2-35-5. Drlg. 3,310 ft.

J. W. Murfin's No. 1 Jarvis, N½ SW NE Sec. 19-31-5. M.I.M.

E. B. Shawver's No. 1-B Widener, C S½ SE NW Sec. 11-30-4. Miss. 2,825-40 ft.; T.D. 3,021 ft., S.D.

Earl Wakefield's No. 1-A Dunn, C W½ SE NE Sec. 3-35-5. Drlg. 1,735 ft.

Douglas County

Kerlyn Oil Co.'s No. 1 Wise, C SE SW Sec. 28-12-20. T.D. 580 ft.; skdd. rig; drlg. 350 ft.

Ellis County

Gulf et al's No. 1 Sander, CWL SW SE Sec. 30-13-16w. W.O.C. 215 ft.

Ellsworth County

Aylward Prod. Co.'s No. 1 Haska, CEL SE SE Sec. 6-16-10w. R.U.R.

Moore's No. 1 Little, C S½ SE NE Sec. 30-16-10w. Drlg. 640 ft.

Pryor & Lockhart's No. 1 Stratman, C W½ NW NW Sec. 1-17-10w. Drlg. 2,800 ft.

Sharon Drlg. Co.'s No. 1 Norotny, C N½ NW NE Sec. 32-16-10w. W.O.C. 1,200 ft.

Greenwood County

Ashlock et al's No. 2-A Lindemood, NE NW SW Sec. 7-25-13. Drlg. 600 ft.

A. A. Hinze et al's No. 1 Hester, NW SW NE Sec. 1-22-12. S.D. 510 ft.

C. L. Sheedy et al's No. 1 Hook, NW SW NW Sec. 4-22-10. Miss. 2,333-69 ft., T. D.; P. est. 5 B.O.P.D.; R.U.D.D.

Johnson County

McCain et al's No. 1 Doan, CEL NW SE Sec. 34-12-22. S.D. 1,433 ft.

Leavenworth County

Wamhoff & Lebsack's No. 1 Moduska, C SE NE Sec. 36-8-20. C.O. 840 ft.

McPherson County

Aladdin Pet. Co.'s No. 1 Bitikofer, CNL NE NW Sec. 1-20-1w. Lans. 2,315 ft.; Miss. 2,885 ft.; R.U.S.T. 2,888 ft.

H. & M. Drlg. Co.'s No. 1 Swenson, S½ SW NE Sec. 9-18-4w. C.O. 2,233 ft.

Marion County

Harrington & Lorieaux's No. 1 Belton SE SE NE Sec. 30-17-4. Drlg. 2,380 ft.

Pawnee County

Lauck & Moncrief's No. 1 Gilkison, CEL NE SW Sec. 21-22-16w. Drlg. 1,750 ft.

Reno County

Dutton et al's No. 1 Green, SE SE SE Sec. 8-23-4w. S.D. 2,505 ft.

Westgate-Greenland's No. 1 Schlickau, C N½ SE SW Sec. 8-25-4w. Drlg. 2,930 ft.

Rice County

Derby Oil Co.'s No. 1 Monroe, CWL NW SE Sec. 26-18-9w. Drlg. 500 ft.

F. G. Holl's No. 1 Wilkens, NW NW NE Sec. 28-18-6w. Miss. 3,447 ft.; T.D. 3,514 ft.; ran jeep.

J. N. Kaufman's No. 1 Hayes, CNL NE

NE Sec. 25-21-7w. Lans. 2,930-65 ft.; fsg.

Rooks County

Lario O. & G. Co.'s No. 1 Morrison, C S½ SW NE Sec. 32-10-17w. Lans. 3,300 ft.; Arb. 3,661-81 ft., T.D.; D.&A.

Seaney & Ciampitt's No. 1 Morrison, CSL SW NE Sec. 32-10-17w. Loc.

Wakefield et al's No. 1 Diehle, C N½ NW NW Sec. 4-9-17w. M.I.M.

Russell County

I. W. Murfin et al's No. 1 St. Aubyan, CSL SW SE Sec. 1-15-15w. Tpka. 2,710 ft.; Lans. 3,000 ft.; drlg. 3,077 ft.

Simpson Oil's No. 1 Rush, CWL NW SW Sec. 33-14-14w. U.R. to 2,400 ft.

Sedgwick County

G. A. Fuller's No. 1 Stilt, CSL SE NE Sec. 21-27-1w. S.S.O. 2,678 ft.; incr. at 2,798-2,806 ft.; P. 2 B.O. and 20 B.W. P.H.; pot. 23 B.O.

Schermerhorn Oil Co.'s No. 1 Sanders, NE NW SE Sec. 2-25-2. Drlg. 2,555 ft.

Woodson County

Cooper's No. 1 Sowder, SE SE NW Sec. 31-25-14. Drlg. 457 ft.

Trego County

W. N. Bartlett's No. 1 Phannenstell, C SE NW Sec. 30-13-25w. Lans. 3,690 ft.; drlg. 4,665 ft.

MISSOURI

Mercer County

Geo. Moore's No. 1 Moss, NW SW SE Sec. 30-65n-24w. T.D. 1,900 ft.

NEBRASKA

Fillmore County

Dan Kornfeld's No. 1 Mathis, NE NE NE Sec. 22-5-1w. Drlg. 2,500 ft.

Morrill County

C. L. Price's No. 1 Bonner, SE cor. Sec. 10-23-49w. Drlg. 3,700 ft.

Richardson County

Pawnee Royalty Co.'s No. 1 Boice, CSL N½ NE NE Sec. 18-1n-16e. O.W.D.D.; Vla. 2,911 ft.; water; drlg. 3,050 ft.

Pawnee Royalty Co.'s No. 1 Bucholz, C NW SW Sec. 17-1n-16e. Saturation in Hunton core at 2,222 ft.; R.U.S.T.

Uhrl Oil Co.'s No. 1 Ogle, NE NW SE Sec. 9-1n-14e. Set csg. at 400 ft.

ARKANSAS

Clark County

J. H. Coker and J. P. Grieves' No. 1 C. McClellan, 330 ft. NW cor. NW SE Sec. 11-20-21. T.D. 1,145 ft.; S.D. repairs.

W. S. King's No. 1 N. Ross, 640 ft. S, 359 ft. W, NE cor. S½ SW Sec. 3-10-21. T.D. 2,158 ft.; S.D.

W. P. Wilson's No. 1 Hamilton & Mathews, 50 ft. W, C SE NE Sec. 31-10s-20w. S.D. high wtr. 1,622 ft.

Columbia County

Hunt Oil Co.'s No. 1 E. Garner, C N½ NE NE Sec. 25-17-20, and N½ NW NW Sec. 11-20-21. T.D. 1,150 ft.; S.D.; re-9⅝-in. csg. 2,150 ft.; drlg. r.&gr. sh. 5,712 ft.

J. K. Mahoney's No. 3 Emma Riley, C SE SW Sec. 11-18-19. Set 16-in. csg. 138 ft.; drlg. rd. sdy. sh. 7,456 ft.

Standard Oil Co.'s No. 1-C Gunnels unit, 660 ft. N, 595 ft. E. SW cor. SE NW Sec. 20-17-19. Set 9⅝-in. csg. 2,173 ft.; W.O.C.

Standard Oil Co.'s No. 2-B Longino, Sec. 19-17-19. Drlg. 5,295 ft.

Tide Water Asso. Oil Co. and Seaboard Oil Corp.'s No. 1 C. H. Murphy et al, C SW NE Sec. 14-18-19. Set 9⅝-in. csg. 2,523 ft.; T.D. 8,177 ft.; set csg. 8,167 ft.; W.O.C.

G. H. Vaughn et al's No. 1 Mahoney, C NW NW Sec. 13-18-19. Set 9⅝-in. csg. 2,518 ft.; set 6-in. csg. 8,237 ft.; perf. 8,127-37 ft., 8,140-47 ft., 8,185-91 ft., and 8,169-75 ft.; tstd. mud and 45 B. F., 50% S.W.; went dead and kicked off again; pkr. gave way; reset and flwd. oil; went dead; arng. recmt. to shut off S.W.

Faulkner County

Cato Oil Co., Inc.'s No. 1 R. R. Harrell, 330 ft. SE cor. SE SW Sec. 35-4n-12w. T.D. 2,438 ft.; U.R. csg. and set 7-in. csg. 2,370 ft.; bailing to test.

Lafayette County

Atlantic Ref. Co.'s No. 1 Bodcaw Lbr. Co., Sec. 29-17-23. Set 16-in. csg. 341 ft.; set 9⅝-in. 4,222 ft.; cd. Cttn. Vlly. 6,868-82 ft.; rec. 13 ft. gr. sh., 1 ft. hd. tight slightly por. sd.; slight stain and odor; drlg. 6,997 ft.

Lonoke County

Lunnon Howell & Ford's No. 1 City of Cabot, C NE Lot 1, Blk. 6, Sec. 18-4n-9w. Set 4⅝-in. csg. 878 ft.; drlg. 1,084 ft.; (cor.).

J. F. Russell's No. 1 J. T. Gunter, 440 ft. N, 577 ft. W, SE cor. Sec. 17-5n-10w. Drld. sd. S.S.O. 2,231-45 ft.; S.D. 2,312 ft.

Miller County

Standard Oil Co. of La.'s No. 1 W. P. Sturgis, 660 ft. S and W, C Sec. 1-17-27. Set 9⅝-in. csg. 2,497 ft.; drlg. sh. 8,388 ft.

Nevada County

Velma Oil Co.'s No. 1 T. M. Bemis, 330 ft. NW cor. NW NE Sec. 23-10s-22w. Set 10-in. csg. 66 ft.; S.D. 68 ft.

Ouachita County

Liberty Oil Co.'s No. 1 P. T. Hildebrand, 660 ft. S, 330 ft. W, NE cor. SE¼ Sec. 28-15-15. O.W.W.O.; O.T.D. 4,934 ft.; reperf. csg. 2,600-25 ft.; tstd. S.W. and recmtd. perf.; arng. reperf.; set cmt. plug 2,680 ft.; ripped csg. 2,598-2,602 ft.; tstd. S.S.O.; perf. csg. 2,598-2,625 ft.; T.D. 2,680 ft.; pmpg. est. 100 B.P. D. S.W.; arng. P.B. to Nac. sd.

Pulaski County

Coker Oil Corp.'s No. 1 Huffman, 330 ft. NW cor. NW SW SW Sec. 29-4n-11w. T.D. 1,763 ft.; W.O.

Saline County

A. W. Givens' No. 1 Williams, 375 ft. S, 420 ft. E. NW cor. NE NE Sec. 18-3s-15w. Set 6-in. csg. 500 ft.; S.D. 550 ft.

Sevier County

R. A. McArthur's No. 1 Bell est., 20 ft. SE cor. SE SW Sec. 29-9s-32w. S.D. 732 ft.

St. Francis County

D. T. Hargraves et al's No. 1 J. T. Wellford, 400 ft. N, 300 ft. W, SE cor. NE NE Sec. 29-4n-1w. R.U.

Union County

Barnsdall Oil Co.'s No. 1 North Central Texas, 272 ft. S, 327 ft. E, NW cor. Sec. 5,18-14. Drlg. r.&gr. sh. 3,750 ft.

Berg & Laney's No. 1 Cutrer, 150 ft. N, 660 ft. W, SE cor. NW SW Sec. 21-17-14. Cd. 2,727-28 ft.; rec. 7-in. por. sd.; cd. 2,728-35 ft.; rec. 7½ ft. soft por. sd., salty taste; drlg. by fish 350 ft.; T.D. 3,370 ft.; set 5½-in. csg. 2,771 ft.; perf. 2,702-05 ft.; bailed down 1,000 ft. and tstd. S.W.; recmtd. perf. 2,601-03 ft. and reperf. 2,572-74 ft.; T.D. 2,575 ft.; changing to smaller rig.

Marine Oil Co.'s No. 1-A W. B. Thompson, 250 ft. S, 400 ft. E, NW cor. SW SE Sec. 3-18-13. Tstd. oil 3,005-25 ft., and mud 3,203-23 ft.; drlg. 3,257 ft.

P.B. 2,006 ft.; tstd. S.W.; P.B. 1,875 ft. and tstd. S.W.; S.D.; W.O.

L. O. Gandy's No. 1 Whatley, Sec. 12-20-16. Set 10-in. csg. 42 ft.; set 5½-in. csg.; acd. with 1,500 gal.; W.O.S.R.; T.D. 1,535 ft.

J. P. Griffin's No. 2 Muslow, Sec. 26-21-16. Set 10-in. csg. 40 ft.; drlg. sh. 527 ft.

O. K. Hickman's No. 1 Lavine, Sec. 12-20-16. R.U.

D. L. Johnson's No. 1 Single Terry, Sec 10-20-16. Set 6⅝-in. csg. 1,469 ft.; tstd. S.W.; W.O.

Kendricks & Bashaw's No. 1 Huckaby-Parker, Sec. 14-22-16. T.D. 1,616 ft.; S.D.

C. H. Lyons et al's No. 1 Ferris, 750 ft. N, 30 ft. E, SW cor. Sec. 35-18-14. R.U.

P. N. McCullough's No. 1 Rudderdorf, Sec. 11-20-16. Drlg. sh. 837 ft.

Magnolia Pet. Co.'s No. 33 Dillon, Sec. 24-21-15. Set 6⅝-in. csg. 1,554 ft.; T.D. 1,690 ft.; W.O.S.R.

R. Manziel's No. 1-B Muslow, Sec. 6-20-15. Set 7-in. csg. 1,335 ft.; rmg. 1,570 ft.

R. L. Milam's No. 1 Bickham, Sec. 28-21-15. Set 10-in. csg. 40 ft.; S.D. 400 ft.

Providence Oil Co.'s No. 6 Bostwick, Sec 13-22-16. Set 7-in. csg. 2,624 ft.; W.O.C.

Sklar Oil Corp.'s No. 1 Hobbs, Sec. 21-21-15. Set 5½-in. csg. 1,402 ft.; rmg. 1,585 ft.

Stanolind O. & G. Co.'s No. 132 Dillon hrs., Sec. 13-21-15. Rng. csg. 1,680 ft.

Stanolind O. & G. Co.'s No. 14 Slattery, Sec. 21-21-15. Set 5½-in. csg. 1,400 ft.; T.D. 1,595 ft.; acd. 3,000 gal.; tstg.

J. G. Strahan's No. 2-B Stiles, Sec. 32-21-16. Set 5-in. csg. 2,250 ft.

L. L. Sugar's No. 6 Hart, Sec. 22-21-16. Set 6⅝-in. csg. 1,021 ft.; W.O.C.

Jack Terrell's No. 1 Welch, Sec. 3-20-16. Set 4½-in. csg. 1,434 ft.; T.D. 1,540 ft. acd. 4,000 gal.; tstd. S.O. and S.W.

Sloan Wells' No. 1 Stiles, 3,734 ft. N, 1,706 ft. E, SW cor. Sec. 32-21-16. Set 10-in. csg. 340 ft.; cor. T.D. 1,073 ft.; set 6⅝-in. csg. 1,070 ft.; S.D.

Ivan W. Wright's No. 1 Moore, Sec. 1-20-16. Set 10-in. csg. 40 ft.; T.D. 1,560 ft.; S.D.

Catahoula Parish

Continental Oil Co.'s No. 1 Tensas, C N½ SW SW Sec. 12-9-7e. Set 10¾-in. csg. 1,120 ft.; drlg. sh. 6,547 ft.

Claiborne Parish

Ohio Oil Co.'s No. 15 G. W. Taylor Acct. 1, 100 ft. S and W, C SE Sec. 15-23-8. Set 13⅜-in. csg. 980 ft.; W.O.C.

De Soto Parish

Foster & Smith's No. 1 McRae, 800 ft. S, 550 ft. W, C Sec. 5-12-16. Set 10-in. csg. 60 ft.; W.O.C.

Dewey Juan's No. 1 Frost Lbr. Ind., 600 ft. SE cor. SW¼ Sec. 14-22-3e. T. D. 2,949 ft.; bailed down 2,300 ft.; S. S.O.; tstd. S.S.O.&S.W.; cd. to 2,938 ft. (cor.) and S.D. 3,255 ft.

Watts O. & G. Co.'s No. 1 Frank Gro. Co., 338 ft. S, 450 ft. W, NE cor. NW Sec. 35-12-11. Br. sd. 2,503-2,634 ft.; set 6-in. csg. 2,503 ft.; T.D. 2,634 ft.; ran lnr.; bttm. 320 ft.; perf.

Grant Parish

J. E. Granstaff's No. 2 Morrison, 2,100 ft. S, 400 ft. W, NE cor. NW SW Sec. 10-9n-1e. Set 10-in. csg. 41 ft.; set 6-in. csg. 1,535 ft.; bttm. 6 ft. perfd.

John Pundt's No. 1 Reed est., 805 ft. S, 429 ft. W, NE cor. NW SW Sec. 10-7n-3w. Set 16-in. csg. 182 ft.; T.D. 1,447 ft.; reported S.G. 1,250-80 ft.; drlg. sh. 2,021 ft.

La Salle Parish

Ark. Fuel Oil Co.'s No. 1-A Goodpine, C SW SW Sec. 7-20-3e. T. Wlx. 1,620 ft.; oil sds. 2,209-26 ft., 2,234-42 ft., and 2,362-84 ft.; S.W. sd. 2,384-95 ft.; set. 7-in. csg. 2,404 ft.; tstg.

Ark. Fuel Oil Co. and Placid Oil Co.'s No. 2 Goodpine, C SW NW Sec. 18-10-3e. Set 7-in. csg. 2,430 ft.; W.O.C. oil sds. 2,232-42 ft., 2,260-71 ft., and 2,379-82 ft.; tstg.

Atlantic Ref. Co.'s No. 2-A Goodpine, 75 ft. N, C SW NE Sec. 28-9-2e. Set 10¾-in. csg. 243 ft.; drlg. sd.&sh. 1,904 ft.

E. F. Neely's No. 1 Lizendy, 330 ft. NW cor. NE NE Sec. 19-10-3. T. Wlx. 1,600 ft.; br. sh. 2,227-41 ft.; cd. oil sd.; T.D. 2,380 ft.; W.O.

Placid Oil Co.'s No. 3 Goodpine, C SE SE Sec. 12-10-2e. T. Wlx. 1,590 ft.; oil sds. 2,200-13 ft., 2,222-45 ft., and 2,363-75 ft.; rng. csg. 2,405 ft.

Placid Oil Co.'s No. 10 La. Cent. Lbr. Co., C NW SW Sec. 7-10n-3e. Took side-wall cores 3,880 ft.; set csg. 2,650 ft.; perf. 2,224-28 ft.; D.S.T.; ⅛-in. T. ck. and ¼-in. B. ck.; flwd. est. 75 B. P.D., 30% oil, 70% S.W.; sqzd. and reperf. 2,206-12 ft. and flwd. 3 to 4 B. P.H.; open tbg.; T.D. 2,212 ft.; swbd. and sqzd. and perf. 2,206-15 ft.; arng. swb.

Placid Oil Co.'s No. 12 La. Central, C NE SE Sec. 13-10-2. Set 7-in. csg. 2,382 ft.; T. Wlx. 1,599 ft.; oil sds. 2,174-95 ft., 2,213-20 ft., 2,330-33 ft.; 2,243-48 ft., 2,293-2,312 ft., and 2,353-82 ft.; S.W. sd. 2,382-88 ft.; W.O.C.

Fred Stovall, Tr.'s No. 1 Russell, 200 ft. NW cor. SE SE Sec. 25-10-1e. Loc.

Morehouse Parish

Southern Carbon Co.'s No. 29 Tensas, Sec. 34-22-4. Set 6-in. csg. 2,126 ft.; W.O.C. 2,200 ft.

LOUISIANA

NORTH LOUISIANA

Bienville Parish

Ark. La. Gas Co.'s No. 1-A Carter, 1,372 ft. N, 90 ft. E, SW cor. Sec. 12-16-10. Set 13⅜-in. csg. 149 ft.; 9⅝-in. csg. 1,238 ft.; stk. D.S. 5,149 ft.; C.O. and prep. D.D.

Bossier Parish

Premier Dev. Co.'s No. 1 Mehaffey, 150 ft. S, 1,980 ft. W, NE cor. Sec. 27-19-11. Set 12½-in. csg. 155 ft.; W.O.C.

Triangle Drlg. Co.'s No. 2 Chatman, 1,977 ft. E, 1,995 ft. S, NW cor. Sec. 18-17-11. Set 5½-in. csg. 3,120 ft.; reset csg.; W.O.C.

Triangle Drlg. Co.'s No. 5-C Skannal, Sec. 13-17-12. T. sd. 2,998 ft.; set 5½-in. csg. 2,998 ft.; T.D. 3,010 ft.; W.O.C.

Caddo Parish

C. J. Brown's No. 2 Muslow, Sec. 5-20-15. Set 7-in. csg. 1,362 ft.; rmg. 1,563 ft.

L. M. Calhoun's No. 1 Caddo O. & M. Co., Sec. 12-20-16. Drlg. 516 ft.

D. T. Cauble's No. 1 Darnell, Sec. 17-22-16. Set 10-in. csg. 80 ft.; sd. 3,002-10 ft. and 3,012-52 ft.; S.O.; T.D. 3,204 ft.; set 5½-in. csg.; W.O.C.

J. M. Conner's No. 1 Williams, C NW NW Sec. 14-15-15. Drlg. sh. 2,183 ft.

Cooper Oil Co.'s No. 2-B Stiles, Sec. 33-21-16. 7-in. csg. 944 ft.; set 4½-in. csg. 1,855 ft.; T.D. 1,930 ft.; W.O.C.

Davidson & Brown's No. 1 Wells, Sec. 10-21-15. Set 8-in. csg. 1,597 ft.; acd. with 4,000 gal.; pmpd.; S.O. 1,789 ft.; T.D. 3,000 ft.; set 5½-in. csg.; acd. with 3,000 gal.; tstd. S.W.; S.O.; pld. csg. and

"Now maybe we can convince the boss we need a Sievers Reamer on this string!"

Natchitoches Parish

J. E. Watts' No. 1 Tanner est., 330 ft. SW cor. NW¼ Sec. 18-10-10. Set 10-in. csg. 60 ft.; W.O.C.

Red River Parish

J. E. Parham's No. 1 Haynes, 2,192 ft. N, 1,000 ft. E, SW cor. Sec. 20-13-10. 10-in. csg. 135 ft.; drlg. 953 ft.

Sabine Parish

P. C. Alexander's No. 1 Peters, 327 ft. N, 346 ft. W, SE cor. SE NW SE Sec. 30-8-12. Set 10-in. csg. 65 ft.; 7-in. csg. 2,178 ft.; acd. 2,544 ft.

A. R. Chestnut's No. 1 Logan, 330 ft. SW cor. NW NW Sec. 26-10-13. Set 7-in. csg. 1,885 ft.; drlg. 1,931 ft.

Odell Henson's No. 1 Frost Lbr. Ind., 660 ft. SE cor. Sec. 22-9-13. Reported S.O. 3,146-48 ft.; set 6-in. csg. 3,115 ft.; tstd. S.O. and S.W. 3,148 ft.; dpnd. and tstd. S.O. and S.W. 3,196 ft.; T.D. 3,228 ft.; acd. 3,000 gal.; flwd. 225 bbl. in 16 hrs.; ¼-in. ck.; T.P. 375 lb.; C. P. 650 lb.; S.W. broke in and well went dead; W.O.S.R.

Geo. L. Pace's No. 4 Logan Oil Co., 390 ft. S, 300 ft. E, NW cor. SW Sec. 26-10-13. Set 7-in. csg. 1,981 ft.; perf. 1,922-63 ft.; W.O.S.R.

Roy Raines' No. 1 Carter, NW NW Sec. 27-9-11. SD., 460 ft.; (cor. T.D.).

Sam Sklar's No. 1 First Natl. Bnk., 330 ft. SW cor. NW SW Sec. 29-8-12. Set 10-in. csg. 63 ft.; drlg. 118 ft.

Sutton Zwolle Oil Co.'s No. 3 Sabine, 1,650 ft. S, 660 ft. E, NW cor. NE Sec. 23-7-14. Drlg. sh. 2,160 ft.

J. E. Watts' No. 1 Patterson, 660 ft. SE cor. NE Sec. 33-10-11. R.U.

Union Parish

Memphis Nat. Gas Co.'s No. 4 Frost Lbr. Ind., Sec. 14-22-3. Set 12½-in. csg. 150 ft.; 6-in. csg. 2,155 ft.; W.O.C.

Memphis Nat. Gas Co.'s No. 8 Lankford, Sec. 2-21-3. R.U.

Webster Parish

Hunt Oil Co.'s No. 1 Robt. Scott, C SE SE Sec. 19-21-9. Set 9⅝-in. csg. 5,604 ft.; drlg. hd. sh. 7,516 ft.

Hunt Oil Co.'s No. 6 E. L. Stewart, 200 ft. NW C NE SE Sec. 30-21-10. Drlg. sh. 3,445 ft.

Midstates Oil Corp.'s No. 1 Brenner-Beamsley unit, 100 ft. SE cor. SW SE Sec. 20-21-10. Set 9⅝-in. csg. 5,617 ft.; drlg. sh. 8,070 ft.

West Carroll Parish

Hunter Co.'s No. 1 E. Lee unit, 1,980 ft. W, 660 ft. S, NE cor. Sec. 27-20-10. R.U.

SOUTH LOUISIANA FIELDS

Abbeville—Vermilion Parish

Continental Oil Co.'s No. 1 Boudoin, Sec. 64-12s-3e. 13⅜-in. csg. 1,776 ft.; S.D. 10,930 ft.

Anse La Butte—St. Martin Parish

Glassell & Glassell's No. 2-A Breaux, Sec. 117-9s-5e. Drlg. sh. 1,806 ft.

Glassell & Glassell's No. 1 Patin, Sec. 121-9s-5e. Drlg. sh. 830 ft.

Stanolind O. & G. Co.'s No. 1 L. D. Bergeron, Sec. 88-9s-5e. Loc.

Bancroft—Beauregard Parish

Republic Prod. Co.'s No. 11 Lutcher Moore, Sec. 11-6s-13w. Drlg. sh. 7,026 ft.

Barataria—Jefferson Parish

California Oil Co.'s No. 1 Danciger-State, Sec. 2-16s-23e. Loc.

California Oil Co.'s No. 1 Zeringue-Community, Sec. 2-16s-23e. T.D. 8,275 ft., S.W. sd.; T. sd. 8,250 ft.; sdtrkd. 4,403 ft.; T.D. 8,329 ft.; made sqz. job; re-perf. csg.; pulling screen.

Geo. Conover's No. 1 Conover Community, Sec. 22-15s-23e. Loc.

Fohs Oil Co.'s No. 1 Conselman, Sec. 22 15s-23e. Loc.

Bateman Lake—St. Mary Parish

Texas Co.'s No. 3 Wax Bayou, Sec. 21-16s-12e. 7-in. csg. 10,984 ft.; T.D. 11,127 ft.; rec. 275 ft. of oil 10,879-10,900 ft.; D.S. stk.; fsg.

Baton Rouge—East Baton Rouge Parish

Wm. Helis' No. 5-B Duplantier, Sec. 70-7s-1w. T.D. 6,502 ft.; 7-in. csg. 6,484 ft.

Wm. Helis' No. 9 Nelson, Sec. 36-7s-1w. Loc.

Bayou Blue—Iberville Parish

T. G. Markley and Crosby Drlg. Co.'s No. 1 Baiste, Sec. 74-9s-10e. Cd. O.S. 1,723-51 ft.; run csg.

Superior Oil Co.'s No. 1 E. B. Schwing, Sec. 73-9s-10e. Drlg. sh. 7,665 ft.

Superior Oil Co.'s No. 3 Schwing Lbr. Co., Sec. 74-9s-10e. Loc.

Bayou Choctaw—Iberville Parish

Standard Oil Co. of La.'s No. 2 Cypress, Sec. 28-8s-11e. 10¾-in. csg. 2,250 ft.; T.D. 8,609 ft.; P.B. to sdtrk.

Bayou des Glaise—Iberville Parish

Humble O. & R. Co.'s No. 3-B Wilberts & Sons, Sec. 78-8s-8e. R.U.

Bayou Pigeon—Iberia Parish

Plymouth Oil Co.'s No. 1 Leblanc, Sec. 13-12s-10e. Loc.

Caillou Island—Terrebonne Parish

Texas Co.'s No. 66 State, Sec. 17-23s-20e. T. salt 6,351 ft.; drlg. salt 7,068 ft.

Cameron Meadows—Cameron Parish

Magnolia Pet. Co.'s No. 28 Cameron Meadows, Sec. 21-14s-13w. R.U.

Chacahoula—La Fourche Parish

Sun Oil Co.'s No. 2 Cypress, Sec. 75-15s-15e. T.D. 1,450 ft.; fsg.

Sun Oil Co.'s No. 3 Dibert, Stark & Brown Cypress Co., Sec. 70-15s-15e. 10¾-in. csg. 1,831 ft.; drlg. sdy. sh. 4,898 ft.

Chalkley Field—Cameron Parish

Humble O. & R. Co.'s No. 7 K. B. Hanzen, Sec. 9-12s-8w. P.B. 8,637 ft.; perf. csg. 8,600-10 ft.; I.P. 325 B.P.D.; ⅞-in. ck.

Humble O. & R. Co.'s No. 8-A Hanszen, Sec. 9-12s-6w. Drlg. sd. 7,518 ft.

Shell Oil Co., Inc.'s No. 1 Coastal Club, Cg. sh. 9,585 ft.

Shell Oil Co., Inc.'s No. 7-A Hansen, Sec. 20-12s-6w. Drlg. sh.&L. 7,313 ft.

Chenoyville—Rapides Parish

Amerada Pet. Corp.'s No. 9 Well, Sec. 54-1s-2e. Drlg. 2,630 ft.

S. W. Richardson's No. 11 Well Co., Inc., Sec. 53-1s-2e. T.D. 5,695 ft.; 5½-in. csg. 5,761 ft.; perf. csg. 5,684-5,712 ft.; I.P. 357 B.P.D.; ⅞-in. ck.

S. W. Richardson's No. 12 Well, Sec. 53-1s.2e. Drlg. sh. 5,367 ft.

Darrow—Ascension Parish

Humble O. & R. Co.'s No. 3-B Community, Sec. 47-10s-2e. T.D. 9,259 ft.; P.B.; sdtrkd.; drlg. sh. 8,278 ft.

Humble O. & R. Co.'s No. 29 Community, Sec. 30-10s-2e. Loc.

Kiva Oil Co.'s No. 1 Duplessis, Sec. 69-10s-2w. S.D. 2,523 ft.

Dog Lake—Terrebonne Parish

Texas Co.'s No. 11 State, Sec. 32-21s-16e. 10¾-in. csg. 1,751 ft.; drlg. sd. 7,175 ft.

Texas Co.'s No. 24 State, Sec. 5-22s-16e. Loc.

Edgerly—Calcasieu Parish

Emerson Oil Corp.'s No. 3 Stanolind fee Sec. 28-9s-11w. Sdtrkd.; T.D. 3,680 ft.; 5½-in. csg. 3,665 ft.; S.D.

Eola—Avoyelles Parish

Amerada Pet. Corp.'s No. 3 Avoyelles, Sec. 5-2s-3e. Drlg. sh. 8,026 ft.

Amerada Pet. Corp.'s No. 1 Sam Cerami, Sec. 6-2s-3e. Drlg. sd.&sh. 8,320 ft.

Amerada Pet. Corp.'s No. 4 Sam Cerami, Sec. 6-2s-3e. R.U.

Amerada Pet. Corp.'s No. 3 Irion, Sec. 6-2s-3e. Drlg. sh. 6,729 ft.

Amerada Pet. Corp.'s No. 1 R. Tubre, Sec. 31-1s-3e. Drlg. sh. 7,690 ft.

Hany Bass & Lake's No. 1 Ritchie Grocery, Sec. 3-1s-3e. T.D. 8,582 ft.; 5½-in. csg. 8,580 ft.

Gulf Oil Corp.'s No. 3 Mouliere, Sec. 1-2s-2e. Drlg. sh. 5,610 ft.

G. R. Kenedy's No. 1 Josie Hudson, Sec. 1-2s-2e. T.D. 8,572 ft.; I.P. 470 B.P.D.; ¼-in. ck.

Lester A. Lemoine's No. 1 fee, Sec. 41-1s-3e. Loc.

Geo. Lilly's No. 2 Dent, Sec. 1-2s-2e. Loc.

S. W. Richardson's No. 12 Haas Inv. Co., Sec. 8-2s-3e. Drlg. sh. 4,213 ft.

Erath—Vermilion Parish

Strake Pet. Co., Inc.'s No. 1 V. L. Caldwell, Sec. 41-13s-4e. Drlg. 3,020 ft.

Fausse Point—Iberia Parish

Sun Oil Co.'s No. 2 Planters Lbr. Co., Sec. 27-11s-8e. R.U.

Texas Co.'s No. 7 State, Sec. 35-11s-8e. T. salt 7,001 ft.; T.D. 7,005 ft.

Garden Island—Plaquemines Parish

Texas Co.'s No. 44 State, Sec. 49-23s-33e. Drlg. sh. 4,400 ft.

Gibson—Terrebonne Parish

Shell Oil Co., Inc.'s No. 8 Pelican, Sec. 35-17s-15e. Drlg. sh. 11,158 ft.

Gillis—Calcasieu Parish

Fohs Oil Co.'s No. 2-A M. P. Erwin, Sec. 14-9s-8w. Rec. S.W. 7,155-69 ft.

Union Sulphur Co.'s No. 9 Kaufman, Sec. 7-9s-7w. Drlg. sh.&sd. 7,140 ft.

Union Sulphur Co.'s No. 3 McIver, Sec. 14-9s-8w. Loc.

Golden Meadow—La Fourche Parish

Bateman Drlg. Co.'s No. 1 Harry Louviere, Sec. 9-18s-22e. T.D. 5,560 ft.; 5½-in. csg. 5,200 ft.; perf. csg. 5,150-80 ft.; abd.

Bennett O. & R. Co.'s No. 2 Authement, Sec. 12-18s-22e. R.U.

Bennett O. & R. Co.'s No. 3 Authement, Sec. 12-19s-22e. T.D. 8,625 ft.; 7-in. csg. 8,625 ft.; perf. csg. 8,555-65 ft.; I.P. 64 bbl. dist. per day; ⅛-in. ck.

Bennett O. & R. Co.'s No. 1 Abel Bruce, Sec. 2-19s-22e. T.D. 2,675 ft.; 5⅜-in. csg. 2,648 ft.

Bennett O. & R. Co.'s No. 1 Guilbeau, Sec. 2-19s-22e. Drlg.

Bennett O. & R. Co.'s No. 4 Leo Lafont, Sec. 2-19s-22e. 16-in. csg. 78 ft.; drlg. sdy. sh. 4,990 ft.

Bennett O. & R. Co.'s No. 5 Leo Lafont, Sec. 2-19s-22e. T.D. 2,675 ft.; I.P. 153 B.P.D.; 10/64-in. ck.

Berkshire Oil Co.'s No. 1 Nicol, Sec. 9-19s-22e. 10¾-in. csg. 2,362 ft.; drlg. sh. 6,200 ft.

Berkshire Oil Co.'s No. 1 Rebstock, Esponage Community, Sec. 2-19s-22e. T.D. 2,670 ft.; 5½-in. csg. 2,636 ft.; I.P. 168 bbl., 40% S.W.

Brown & Woods' No. 1 Guilbeau, Sec. 2-19s-22e. R.U.

Brown & Woods' No. 1 State-Bayou, Sec. 9-19s-22e. T.D. 2,697 ft.; perf. csg. 2,650-65 ft.

Temple Hargrove's No. 4 Gaspard & Rizan, Sec. 9-19s-22e. 10¾-in. csg. 590 ft.; drlg. sh.&sd. 4,519 ft.

M. H. Marr et al's No. 1 Alario Community, Sec. 2-19s-22e. T.D. 2,665 ft.; 5-in. csg. 2,640 ft.; would not flow; S.D.

M. H. Marr et al's No. 2 Alario Community, Sec. 2-19s-22e. T.D. 2,665 ft.; 5¼-in. csg. 2,640 ft.

M. H. Marr et al's No. 2 B. & D. unit, Sec. 17-19s-22e. Road comp.

M. H. Marr et al's No. 3 B.&D. unit, Sec. 12-19s-22e. M.I.M.

M. H. Marr et al's No. 3 Terrebonne, Sec. 9-19s-22e. T.D. 5,506 ft.; 5½-in. csg. 5,505 ft.; I.P. 228 B.P.D.; 12/64-in. ck.

Martex Oil Corp. of La.'s No. 3 Falgout Holding Co., Sec. 9-19s-22e. Drlg. sh. 1,160 ft.

Martex Oil Co.'s No. 3-A Rebstock, Sec. 2-19s-22e. T.D. 2,665 ft.; 5-in. csg. 2,665 ft.; perf. csg. 2,630-62 ft.; S.I.; I.P.; gas well.

Geo. O'Dwyer et al's No. 2 La Fourche Realty, Sec. 21-19s-22e. Drlg. sh. 2,784 ft.

S. Rhodes' No. 1 Nickerson, Sec. 12-9s-8w. Drlg. sh. 5,520 ft.

Terouche Oil Co.'s No. 2 Cheramie, Sec. 12-19s-22e. Drk.

Texas Co.'s No. 12 Golden Meadow, Sec. 78-19s-21e. Drlg. sh. 8,651 ft.

Texas Co.'s No. 11 L.L.&E., Golden Meadow, Sec. 78-19s-21e. Drlg. sh. 2,913 ft.

Texas Co.'s No. 5 La Terre, Sec. 2-20s-21e. T.D. 4,026 ft.; abd.

Texas Co.'s No. 6 Le Terre, Sec. 1-20s-21e. 10¾-in. csg. 2,050 ft.; drlg. sh. 5,426 ft.

Texas Co.'s No. 7 State-Catfish, Sec. 2-20s-21e. Cg. 2,696 ft.

Grand Bay—Plaquemines Parish

Gulf Ref. Co.'s No. 2-A Grand Prairie Lv. dist., Sec. 48-20s-18e. Drlg. sdy. sh. 7,853 ft.

Gulf Oil Corp.'s No. 7-A Grand Prairie Lv. Dist., Sec. 5-20s-19e. Loc.

Gulf Oil Corp.'s No. 8-A Grand Prairie Dist., Sec. 5-20s-19e. Loc.

Gulf Ref. Co.'s No. 9-A Grand Prairie Lv. dist., Sec. 31-19s-19e. Loc.

Gulf Oil Corp.'s No. 5 State QQ, Sec. 31-19s-19e. Loc.

Gulf Ref. Co.'s No. 6 State, Sec. 5-20s-19e. Drlg. 6,510 ft.

Texas Co.'s No. 1 State-Lookout Pass, Sec. 48-20s-18e. T.D. 10,252 ft.; 7-in. csg. 10,252 ft.; perf. csg. 9,907-10,013 ft.; tstg.

Texas Co.'s No. 3 State-Lookout Pass, Sec. 6-20s-19e. Loc.

Grand Lake—Cameron Parish

Amerada Pet. Corp.'s No. 8 State, Twp. 13s-4w. T.D. 9,000 ft.; run csg.

Superior Oil Co.'s No. 11 State, Twp. 13s-4w. T.D. 8,990 ft.; perf. csg. 8,384-8,400 ft.; I.P. 330 B.P.D.; 10/64-in. ck.

Hackberry—Cameron Parish

Gulf Ref. Co.'s No. 15 Erwin, Sec. 12-12s-10w. T.D. 6,611 ft., salt; perf. csg. 6,122-31 ft.; tstg.

Hanson & Abercrombie's No. 2 Verdin, Sec. 36-12s-10w. Drlg. sh.&L. 5,406 ft.

Stanolind O. & G. Co.'s No. 22 Cameron Parish, Sec. 16-12s-10w. Loc.

Stanolind O. & G. Co.'s No. 31 Gulf Ld., Sec. 25-12s-11w. Drlg. sd.&sh. 5,610 ft.

Superior Oil Co.'s No. 10 Vincent, Sec. 30-12s-10w. Drlg. sh. 6,150 ft.

Happytown—Iberville Parish

Shell Oil Co., Inc.'s No. 1 Schwing Lbr. & Shingle Co., Sec. 85-7s-8e. T.D. 9,928 ft.; oil sd.; make D.S.T.

Horseshoe Bayou—St. Mary Parish

Texas Co.'s No. 4 State, Sec. 23-17s-9e. Drlg. sd. 11,596 ft.

Jeanerette—St. Mary Parish

Herton Oil Co.'s No. 10 Banta, Sec. 40-13s-9e. Drlg. sd.&sh. 7,184 ft.

Jefferson Island—Iberia Parish

Texas Co.'s No. 5 Jefferson Island, Sec. 58-12s-5e. 10¾-in. csg. 2,209 ft.; drlg. sh. 3,826 ft.

Texas Co.'s No. 3 State, Twp. 12s-5e. T.D. 7,749 ft.; P.B. 5,731 ft.; to sdtrk.

Jennings—Acadia Parish

Glassell-Glassell's No. 8 McFarlain, Sec. 41-9s-2w. Drlg. sh. 6,910 ft.

Shell Oil Co., Inc.'s No. 11 Community, Sec. 40, 10¾-in. csg. 1,721 ft.

Stanolind O. & G. Co.'s No. 117 Crowley O. & Min. Co., Sec. 48-9s-2w. T.D. 7,690 ft.; 7-in. csg. 7,593 ft.; perf. csg. 8,595-97 ft.; I.P. 799 B.P.D.; ¼-in. ck.

Stricker-Pharis et al's No. 1 Gulf fee, Sec. 45-9s-2w. 16-in. csg. 60 ft.; S.D. 7,503 ft.

Lafitte—Jefferson Parish

Texas Co.'s No. 15 Lafitte, Sec. 20-17s-24e. T.D. 10,135 ft.; 7-in. csg. 10,123 ft.; perf. csg. 9,475-9,505 ft.; rec. S.W.; perf. csg. 4,805-10 ft.

Texas Co.'s No. 16 L.L.&E., Lafitte, Sec. 17-17s-24e. Loc.

Texas Co.'s No. 6-A Madison Realty Co., Sec. 17-17s-24e. Drlg. sh.&L. 8,488 ft.

La Fourche Crossing—La Fourche Parish

Lisbon-Iberia Oil Co.'s No. 1 Joe Bergeron, Sec. 16-15s-17e. Loc.

Lisbon-Iberia Oil Co.'s No. 1 Prosper Thibodaux, Sec. 17-15s-17e. Drlg. sh. 7,730 ft.

Lake Mongoulois—St. Martin Parish

Texas Co.'s No. 8 State, Sec. 10-10s-9e. Drlg. sh.&L. 8,890 ft.

Lake Pelto—Terrebonne Parish

Texas Co.'s No. 31 State, Sec. 8-23s-18e. Drlg. sd. rk. 5,530 ft.

Leeville—La Fourche Parish

Texas Co.'s No. 73 Leeville, Sec. 27-21s-22e. Drlg. sh. 2,180 ft.

Neale—Beauregard Parish

Atlantic Ref. Co.'s No. 1 Spiers, Sec. 26-3s-11w. Drlg. sh. 1,030 ft.

New Iberia—Iberia Parish

Acadian Prod. Co.'s No. 4 E. T. Weeks, Sec. 51-12s-7e. Loc.

Wm. Helis' No. 10 Schwing, Sec. 56-12s-7e. Drlg. sh. 8,894 ft.

Texas Co.'s No. 2 Bryant, Sec. 25-12s-7e. R.U.

Texas Co.'s No. 7 Bryant, Sec. 25-12s-7e. R.U.

Texas Co.'s No. 17 Duhe, Sec. 26-12s-7e. T.D. 5,354 ft.; P.B. 4,449 ft.; sdtrkd.; drlg. sh. 4,851 ft.

Texas Co.'s No. 2 Hebert, Sec. 25-12s-7e. 10¾-in. csg. 1,935 ft.; T.D. 8,535 ft.; 7-in. csg. 8,515 ft.; flwd. oil and S.W. 8,470-84 ft.

Texas Co.'s No. 2 Smith, Sec. 71-12s-7e. T.D. 9,791 ft.; 7-in. csg. 9,791 ft.; perf. csg. 9,212-26 ft.

North Crowley—Acadia Parish

Humble O. & R. Co.'s No. 7 Ohlenforst, Sec. 34-8s-1e. Drlg. sh. 7,800 ft.

Humble O. & R. Co.'s No. 8 Ohlenforst, Sec. 34-8s-1e. T.D. 8,810 ft.; P.B. 8,681 ft.; 7-in. csg. 8,307 ft.; perf. csg. 8,595-97 ft.; I.P. 779 B.P.D.; ¼-in. ck.

Humble O. & R. Co.'s No. 5 Stakes, Sec. 33-8s-1e. R.U.

Humble O. & R. Co.'s No. 6 Stakes, Sec. 33-8s-1e. Drk.

North Elton—Calcasieu Parish

W. T. Burton's No. 1 Calcasieu Natl. Bnk., Sec. 23-6s-3w. R.U.

W. T. Burton's No. 1 Pine Farms, Sec. 24-6s-3w. Loc.

Paradis—St. Charles Parish

Humble O. & R. Co.'s No. 1 Matthews & Olivera, Sec. 4-14s-20e. Loc.

Texas Co.'s No. 4 L.L.&E. Paradis, Sec. 6-14s-20e. 10¾-in. csg. 2,607 ft.; drlg. sh. 6,630 ft.

Texas Co.'s No. 1 Sunset Realty & Planting Co., Sec. 38-14s-20e. 10¾-in. csg. 2,716 ft.; drlg. sdy. sh. 7,860 ft.

Plumb Bob—St. Martin Parish

Texas Co.'s No. 13 St. Martin Ld. Co., Sec. 21-8s-7e. Cg. sdy. sh. 8,533 ft.

Texas Co.'s No. 14 St. Martin, Sec. 21-8s-7e. Loc.

Port Barre—St. Landry Parish

Gulf Ref. Co.'s No. 16 Wilson Cochran, Sec. 4-6s-5e. Bldg. rd.

McDannald Oil Co.'s No. 1 Sibille, Sec. 7-6s-6e. T.D. 5,852 ft., salt; P.B.; sidetracked; drlg. sh. 5,806 ft.

McDannald Oil Co.'s No. 2 Sibille, Sec. 7-6s-6e. Loc.

Pan American Prod. Co.'s No. 6 Garland, Sec. 4-6s-5e. Drlg. sh. 4,460 ft.

Texas Co.'s No. 28 Botney Bay, Sec. 4-6s-5e. R.U.

Potash—Plaquemines Parish

Humble O. & R. Co.'s No. 43 Orleans Lv. Bd., Sec. 14-18s-15e. T.D. 6,424 ft.; fsg.

Quarantine Bay—Plaquemines Parish

Gulf Oil Corp.'s No. 6-A Orleans Lv. Bd., Sec. 7-19s-17e. Drlg. sdy. sh. 8,210 ft.

Gulf Ref. Co.'s No. 17 State, Twp. 19s-17e. Drlg. sh. 1,830 ft.

Gulf Ref. Co.'s No. 18 State, Twp. 19s-17e. Loc.

Raceland—La Fourche Parish

Amerada Pet. Corp.'s No. 5 South Coast Corp., Sec. 34-15s-19e. T.D. 10,210 ft.; perf. csg. 10,170-10,208 ft.; I.P. 861 B. P.D.; ¼-in. ck.

Sorrento—Ascension Parish

Sorrento Synd.'s No. 2 L. L. Bernard, Sec. 22-10s-4e. R.U.

South Jennings—Jeff Davis Parish

W. H. Collins' No. 1 Richard, Sec. 22-10s-3w. Drk.

Stanolind O. & G. Co.'s No. 1 W. H. Adams, Sec. 14-10s-3w. Drlg. 960 ft.

Stanolind O. & G. Co.'s No. 1 E. K. Atwell, Sec. 14-10s-3w. Loc.

Stanolind O. & G. Co.'s No. 1 L. Remage, Sec. 9-10s-3w. Drlg. sdy. sh.&L. 10,739 ft.

South Roanoke—Jeff Davis Parish

Continental Oil Co.'s No. 2 Fay, Sec. 31-10s-3w. Drlg. sh. 5,461 ft.

Continental Oil Co.'s No. 4 Sturdevant, Sec. 35-10s-4w. Drlg. sh.&sd. 9,742 ft.

Starks—Calcasieu Parish

W. T. Burton & McLean's No. 2 Industrial Lbr. Co., Sec. 29-9s-12w. Cg. sd. 5,846 ft.

W. T. Burton Oil Co.'s No. 1 Lutcher Moore Lbr. Co., Sec. 30-9s-12w. T. salt 4,801 ft.; S.D.

Sweet Lake—Cameron Parish

Pure Oil Co.'s No. 16 Stanolind O. & G. Co., Sec. 12-13s-8w. T.D. 7,482 ft.; P. B. to test.

Venice—Plaquemines Parish

Tide Water Asso. Oil Co.'s No. 7 Buras Lv. Bd., Sec. 22-21s-30e. 16-in. csg. 205 ft.; T.D. 10,765 ft.; 7-in. csg. 10,660 ft.; perf. csg. 10,493-10,540 ft.; I.P. 375 B.P.D.; 5/32-in. ck.

Tide Water Asso. Oil Co.'s No. 1 C. L. Johnson, Sec. 35-21s-30e. Drlg. sh. 6,097 ft.

Tide Water Asso. Oil Co.'s No. 12 Manhattan Ld. Co., Sec. 35-21s-30e. Loc.

Vermilion Bay—Iberia Parish

Texas Co.'s No. 4-B Vermilion Bay, Twp. 16s-15e. 11¾-in. csg. 4,454 ft.; T. salt 5,855 ft.; T.D. 7,546 ft.; fsg.

Villa Platte—Evangeline Parish

Amerada Pet. Corp.'s No. 1 J. Foret, Sec. 1-4s-2e. R.U.

Continental Oil Co.'s No. 3 Corell. Se 36-3s-2e. T.D. 10,254 ft.; perf. csg. 10,-104-13 ft.; I.P. 318 B.P.D.; ¼-in. ck.

Continental Oil Co.'s No. 6 Deville, Sec 3-4s-2e. T.D. 9,005 ft.; tstg.

Continental Oil Co.'s No. 6 Haas, Sec. 44 3s-2e. T.D. 9,103 ft.; I.P. 80 bbl., 14 hrs.; ¼-in. ck.

Continental Oil Co.'s No. 1 Opelousa, St. Landry, Sec. 44-3s-2e. T.D. 9,087 ft. perf. csg. 8,856-68 ft.; I.P. 148 B.P.D.; ¼-in. ck.

Continental Oil Co.'s No. 1 Adam Tate, Sec. 41-4s-2e. T.D. 10,089 ft.; tstg.

Continental Oil Co.'s No. 1 J. E. Vidrine, Sec. 1-4s-2e. Drlg. sd.&sh. 10,170 ft.

Danciger O. & R. Co.'s No. 2 J. E. Vidrine, Sec. 1-4s-2e. T.D. 10,189 ft.; perf. csg. 10,102-22 ft.; I.P. 620 B.P.D.; ¼-in. ck.

J. K. Hughes' No. 2 Ortego, Sec. 36-3s-2e. Drlg. sh. 9,486 ft.

West Cote Blanche—St. Mary Parish

Texas Co.'s No. 2 State, West Cote Blanche, Twp. 16s-6e. Drlg. 1,506 ft.

Texas Co.'s No. 3 State, West Cote Blanche, Twp. 16s-6e. Loc.

West Gueydan—Vermilion Parish

Magnolia Pet. Co.'s No. 1 J. Hartwell. Sec. 5-12s-2w. T.D. 7,180 ft.; 7-in. csg. 7,180 ft.; perf. csg. 6,676-88 ft.; I.P. 149 B.P.D.; ¼-in. ck.

West Lake Verret—St. Mary Parish

Shell Oil Co., Inc.'s No. 4 Jeanerette. 7⅝-in. csg. 10,683 ft.; T.D. 11,890 ft.; P.B. 10,449 ft.

White Castle—Iberville Parish

Jolly Pet. Corp.'s No. 1 E. B. Adams Sec. 1-11s-12e. T.D. 9,002 ft.; 7-in. csg. 9,001 ft.

Shell Oil Co., Inc.'s No. 16 Wilbert. Sec 8-11s-12e. Drlg. sh.&L. 5,248 ft.

Woodlawn—Jeff Davis Parish

Union Sulphur Co.'s No. 2 Johnson, Sec. 12-9s-6w. 9⅝-in. csg. 9,006 ft.

Union Sulphur Co.'s No. 1 T. Miller, Sec. 6-9s-5w. Loc.

S. LOUISIANA WILDCATS

Acadia Parish

Humble O. & R. Co.'s No. 1 F. E. Atkinson, Sec. 26-10s-1e. R.U.

Humble O. & R. Co.'s No. 1 Leger, Sec 83-8s-2e. T.D. 10,000 ft.; abd.

Assumption Parish

Shell Oil Co., Inc.'s No. 1 A. L. Patereau, Unit 1, Sec. 66-16s-14e. R.U.

Beauregard Parish

Danciger O. & R. Co.'s No. 1 G. E. Leroy, Sec. 2-3s-9e. Loc.

Loffland Bros.' No. 3 Long Bell Lbr. Co., Sec. 24-5s-11w. Drlg. sh.&L. 9,-705 ft.

Cameron Parish

Phillips Pet. Co.'s No. 1 Miami Corp. Sec. 11-4s-6w. Well tried to blow out; stk. D.S.; sdtrkd. 3,775 ft.; 9⅝-in. csg. 9,583 ft.; T.D. 10,050 ft.

Superior Oil Co.'s No. 2 State, Twp. 14s-9w. T. salt 3,614 ft.; drlg. salt 4,465 ft.

East Baton Rouge Parish

Farris & Golding Drlg. Co.'s No. 1 Paulet, Sec. 58-8s-1e. 10¾-in. csg. 1,790 ft S.D. 6,828 ft.

Iberville Parish

Falcon-Seaboard's No. 1 Folse, Sec. 11s-13e. Loc.

Shell Oil Co., Inc.'s No. 1 Southwood, Sec. 20-9s-2e. Drlg. sh. 9,495 ft.

Jeff Davis Parish

H. M. Naylor's No. 1 Acadia Dev. Co., Sec. 12-10s-2w. 10¾-in. csg. 2,115 ft.; 9⅝-in. csg. 9,006 ft.; drlg. sh. 9,400 ft.

Union Sulphur Co.'s No. 1 Somson, Sec. 35-7s-4w. T.D. 9,602 ft.; abd.

Jefferson Parish

Vendome Pet. Co.'s No. 1 Coulon, Sec. 15-15s-23e. Drlg. sh. 7,990 ft.

La Fourche Parish

Ernest Cockrell's No. 1 La Fourche Ld. Co., Sec. 32-18s-22e. 10¾-in. csg. 650 ft.; T.D. 2,988 ft.; N.S.S.

Gulf Oil Corp.'s No. 1-B Bowie Lbr. Co., Sec. 69-15s-19e. Drlg. sh. 11,598 ft.

Humble O. & R. Co.'s No. 1 Caldwell Sugars, Inc., Sec. 115-14s-15e. 13⅜-in. csg. 2,988 ft.; 9⅝-in. csg. 10,921 ft.

Livingston Parish

Roderick Tower, Inc.'s No. 1 James Pirie, Sec. 41-7s-3e. T.D. 9,050 ft.; abd.

Plaquemines Parish

Gulf Oil Corp.'s No. 1-E Buras Lv. dist., Sec. 1-23s-10e. Drlg. sh.&L. 7,927 ft.

California Co.'s No. 1 Delta Minerals, Sec. 2-15s-24e, 13⅜-in. csg. 2,028 ft.; T.D. 10,246 ft.; 7-in. csg. 10,188 ft.; perf. csg. 9,963-74 ft.; flwd. at rate of 250 B.F.P.D.; ¼-in. ck.; T.P. 900 lb.; 6% to 10% b.s.; tstg.

Rapides Parish

Gulf States' No. 1 Long Bell Lbr. Co., Sec. 46-4n-3w. R.U.

R. L. Wheelock et al's No. 1 H. V. Rushing, Sec. 1-2n-1e. Loc.

St. Bernard Parish

Gulf Ref. Co.'s No. 4 State-R.R. (Lake Borgne), Twp. 12s-15e. 9⅝-in. csg. 8,-161 ft.; T.D. 12,019 ft.; fsg.

St. Charles Parish

R. H. Parker et al's No. 1 C. L. Thompson, Sec. 87-13s-20e. 10¾-in. csg. 2,-599 ft.; drlg. sh. 10,596 ft.

St. James Parish

St. James Oil Co.'s No. 1 Celstine Plant, Sec. 74-11s-4e. R.U.

St. Landry Parish

S. A. Thompson's No. 1 Wm. Murphy, Sec. 22-5s-6e. R.U.

St. Mary Parish

Joe Domingue's No. 1 Allain, Sec. 46-13s-9e. T.D. 1,630 ft.; abd.

Herton Oil Co.'s No. 1 H. Gonsoulin, Sec. 68-13s-8e. Bldg. rd.

Morgan City Oil Co.'s No. 1 Adeline Sugar Co., Sec. 33-13s-9e. Loc.

Sun Oil Co.'s No. 1 Belle Isle, Sec. 6-18s-11e. Loc.

Terrebonne Parish

Barnsdall Oil Co.'s No. 1 Nelson, Sec. 2-21s-11e. 10¾-in. csg. 2,767 ft.; 8⅝-in. csg. 10,505 ft.; drlg. sh. 11,718 ft.; electrical survey showed gas 11,347-49 ft. and 11,381-84 ft.; D.S.S.

Stanolind O. & G. Co.'s No. 1 State (Bay Junop), Sec. 35-21s-14e. Loc.

Texas Co.'s No. 5 State, Coon Point, Twp. 23s-14e. Loc.

Vermilion Parish

G. H. Vaughn's No. 1 Avery Bouillon, Sec. 49-13s-4e. T.D. 11,935 ft.; abd.

Union Oil Co. of Calif.'s No. 1 Walter White hrs., Sec. 17-15s-1e. 13⅜-in. csg. 2,800 ft.; drlg. sh. 10,170 ft.

South China—Jefferson County

Titanic Oil Co.'s No. 3-A Broussard, S. Miles Sur. Loc.

Esperson—Liberty County

General Crude Oil Co.'s No. 20 Davis, A. McNeil Sur. 8⅝-in. csg. 7,181 ft.; T.D. 8,471 ft.; fsg.

General Crude Oil Co.'s No. 12-B Esperson, A. McNeil Sur. Loc.

General Crude Oil Co. and R. A. Welch's No. 1 fee, M. Duncan Sur. Drlg. sh. 5,-625 ft.

Martha—Liberty County

Stanolind O. & G. Co.'s No. 1 Garrow, I.&G.N.R.R. Sur. 7. Drlg. sdy. sh.&L. 9,780 ft.

Wilson Creek—Matagorda County

Barnsdall Oil Co.'s No. 1 Stoddard, G. B. M. Cotton Sur. 9⅝-in. csg. 7,895 ft.; drlg. sh. 8,016 ft.

Ace—Polk County

Shell Oil Co., Inc.'s No. 2 Kirby West Lbr. Co., P. A. Sublett Sur. Drlg. 1,-212 ft.

Segno—Polk County

Gordon Oil Co.'s No. 9-A Wing, I.&G.N. Sur. 15. Drlg. sh. 7,967 ft.

Gulf Oil Corp.'s No. 4 Quinn, A. Morales Sur. R.U.

Gulf Oil Corp.'s No. 33 Wing, I.&G.N. Sur. 15. Drlg. sh. 2,169 ft.

Gulf Oil Corp.'s No. 34 Wing, I.&G.N. Sur. 13. Drlg. sh. 6,415 ft.

Humble O. & R. Co.'s No. 22 Kirby Lbr. Co., M. Victor Sur. T.D. 8,150 ft.; P.B. sdtrkd.; drlg. sh. 4,886 ft.

Joe's Lake—Tyler County

Republic Prod. Co.'s No. 35 fee, I.&G.N. Sur. 15. 5½-in. csg. 7,660 ft.

Republic Prod. Co.'s No. 4 Sterne, A. Sterne Sur. Drlg. sh. 2,627 ft.

Hilje—Wharton County

Texas Co.'s No. 2 Peters, E.T.R.R. Sur., Sec. 101. Loc.

GULF COAST WILDCATS

Brazoria County

Glenn McCarthy's No. 1 E. W. K. Andrau, H.T.&B. Sur. 5. 10¾-in. csg. 3,-512 ft.; T.D. 11,468 ft.; sdtrkd.; T.D. 11,410-13 ft.; swbd. W.W.; no S.O.; fsg. for pkr.

Glenn McCarthy's No. 2 Houston Farm Dev. Co., J. Perry & E. Austin Sur. 7. 10¾-in. csg. 3,492 ft.; T.D. 11,760 ft.; 5½-in. lnr. cs. 11,170 ft.; perf. csg. 10,128-31 ft.; swbd. S.W.; fsg. for tbg.

Glenn McCarthy's No. 1 W. B. Munson, Samuel Carter Sur. Drlg. sh. 9,530 ft.

Rowan & Nichols Oil Co.'s No. 1 Hubbard, Wm. Harris Sur. Drlg. sh. 6,-860 ft.

Chambers County

Humble O. & R. Co.'s No. 1 State, Sec. 247, Galveston Bay. R.U.

Humble O. & R. Co.'s No. 1 State, Sec. 288, Galveston Bay. Loc.

Sun Oil Co.'s No. 1 Clara C. Smith, T.& N.O. Sur. 82. T.D. 8,549 ft.; sdtrkd.; T.D. 8,320 ft.; D.S.S.; fsg.

Standard Oil Co. of Texas' No. 61-54 State. T.D. 9,538 ft.; sidewall cores 9,006-20 ft.; showed oil and gas; may run csg.

Colorado County

Cockburn Oil Corp. No. 1 R. W. Ferrs, H. Chrisman Sur. Loc.

Shell Oil Co., Inc.'s No. 1 Plow Realty Co., Obediah K. Winn Sur. Drlg. sh. 8,000 ft.

Fort Bend County

H. C. Cockburn's No. 1 G. W. Burkett, Bundieck Sur. Loc.

W. L. Goldston's No. 1 Hackstedt, H.& T.C.R.R. Sur., Sec. 47. T.D. 5,526 ft.; abd.

Tide Water Asso. Oil Co.'s No. 1 Geo. Armstrong, Jas. Scott Sur. Drlg. sh. &L. 7,008 ft.

Galveston County

Stanolind O. & G. Co.'s No. 1 J. A. Hulen, A. Brigham Sur. 13⅜-in. csg. 2,-470 ft.; drlg. sh. 3,208 ft.

Harris County

Gulf Oil Corp.'s No. 1 H. H. Roberts, A. Roberts Sur. T.D. 7,583 ft., S.D.

Hamill & Smith et al's No. 1 C. B. Carter, D. Putnam Sur. Loc.

Joyce Richardson et al's No. 1 A. and H. Marks, J. Beard Sur. Drlg. sh. 4,-380 ft.

Joyce Richardson's No. 1 Marks, J. C. Ogburn Sur. Drlg.

Martin Thompson's No. 1 Highlands Farm Corp., J. White Sur. Cg. S.W. sd. 5,370 ft.

Jackson County

Barnsdall Oil Co.'s No. 1 Lozarus, S. F. Austin Sur. Loc.

W. Stewart Boyle's No. 1 J. M. Bennett R. Musquez Sur. 10¾-in. csg. 708 ft. cg. sh. 5,607 ft.

J. F. Hutchins et al's No. 1 Wearden, J Williams Sur. T.D. 3,470 ft.; fsg.

John O'Neal et al's No. 1 Ward est., I.& G.N.R.R. Sur. Drlg. sh. 3,277 ft.

Jefferson County

Merrimac Oil Corp.'s No. 1 State, Tr. 72. 50 ft. due E of Harwell's abd. hole. W.O.; R.U.

Liberty County

Hebert & Smith's No. 1 W. E. Boyt, H. &T.C.R.R. Sur. T.D. 8,834 ft.; cleaned hole to 8,096 ft.; sdtrkd. 7,824 ft.; 7-in. csg. 8,700 ft.; T.D. 8,865 ft.; perf. csg. 8,535-75 ft.; made sqz. job; W.O.; D.S. to D.D.

Matagorda County

Deep Rock Oil Corp.'s No. 1 Tom Petrucha, F. W. Dempsey Sur. T.D. 9,-146 ft.; run electrical survey.

Marr McLean's No. 3 Gulf-Tex Oil Co., Ira Ingram Lge. R.U.

Stanolind O. & G. Co.'s No. 1 General American Life Ins., J. C. Peyton Sur. T.D. 9,619 ft.; 9⅝-in. csg. 8,001 ft.

Texas Gulf Prod. Co.'s No. 1 Gulf Tex. Oil Co., Ira Ingram Sur. Drk.

Texas Co.'s No. 1 Taylor, Freeman George Sur. Drlg. sh. 8,917 ft.

Van M. Vincent's No. 1 J. F. McNabb Est., E. R. Wightman Lge. Loc.

Montgomery County

H. C. Cockburn et al's No. 1 Bender, Montgomery Co. Sch. Ld. and De Crow Sur. Loc.

Continental Oil Co.'s No. 1 Bender est., Montgomery Co. Sch. Ld. Sur. 13⅜-in. csg. 1,243 ft.; drlg. sh. 10,469 ft.

David B. MacDaniel's No. 1 Hattie O. Baldwin, Walker Co. Sch. Ld. Sur. 10¾-in. csg. 1,230 ft.; T.D. 9,741 ft.; 5½-in. csg. on bttm.; perf. csg. est. 9,300-9,400 ft.; reperf. csg. 9,302-9,425 ft.; swbg.; showing some gas; rec. small amt. oil.

Newton County

Houston Oil Co. and Republic Prod. Co.'s No. 1 Medrano, J. M. Medrano Lge. Loc.

San Jacinto County

Harrison & Abercrombie's No. 1 W. S. Dixon, Solomon Cole Sur. Drlg. sh. 2,103 ft.

Shell Oil Co., Inc.'s No. 1 Coldine, J. Rankin Sur. Drlg. sh.&L. 6,600 ft.

Tyler County

J. C. Bonham's No. 1 Southwestern Lbr. Co., F. Smyth Sur. T.D. 1,340 ft.; P.B. 1,126 ft.; 4-in. csg. 1,107 ft.; flwd. F. L.O. for 3 hrs.; sanded up.

Washington County

J. A. Deering's No. 1 C. W. Bohne, S. Gates Sur. S.D. 6,545 ft.

Mount Selman Oil Co.'s No. 1 Fritz Fuelberg, W. Lightfoot Sur. S.D. 5,-962 ft.

Wharton County

Cockburn Oil Corp.'s No. 1 Leverage, Jonathan Scott Sur. T.D. 8,461 ft.; 5½-in. csg. 7,900 ft.; perf. lnr. 8,070-90 ft.; flwg. est. 40 bbl. dist per day; ¼-in. ck.

Sam Harrison's No. 1 Carlson, Morris & Cummins Sur., Sec. 3. O.W.D.D.; T.D. 6,510 ft.; wshg. to bttm.

Dr. T. M. Neal's No. 1 fee, Elisha Flack, 4,840 ft.

Strake Pet. Corp.'s No. 1 Poole, Sec. 25, G.H.&H. Sur. T.D. 10,110 ft.; 5½-in. csg. on bttm.; P.B. 9,973 ft.; perf. csg. 9,938-55 ft.; flwd. 3 B.F.P.H., 30% oil, 70% wash wtr.; started to flow 100% S.W.; killed; reperf. csg. 9,927-50 ft.; flwd. S.W.; perf. csg. 9,927-50 ft.; flwg. S.W.; killed; T.A.

S. W. TEXAS WILDCATS

Aransas County

Continental Oil Co.'s No. 2 St. Charles Co., R. D. Blassman Sur.; (relief well to blow out). Drlg. sh. 5,620 ft.

Bastrop County

August Bering's No. 1 Rivers, B. Osborne Sur. Drlg. 1,160 ft.

C. R. Franklin's No. 1 Oscar McDonald, Martha Baker Sur. T.D. 2,232 ft.; fsg.

Ogden & Riddle's No. 6 Riddle, J. H. Blalock Sur. Top L. 2,022 ft.

Bee County

Mills Bennett Prod. Co. and Anderson-Prichard Oil Co.'s No. 2 Robinson, J. M. Uranga Sur. (Wlx. test, West Tuleta field). 13⅜-in. csg. 2,537 ft.; 9⅝-in. csg. 7,804 ft.; T.D. 9,210 ft.; perf. csg. 7,545-50 ft.; tstd. 6½ bbl. dist. per hr.; ¼-in. ck. on tbg.; T.P. 2,600 lb.; C.P. 2,250 lb.; S.I.; W.O.

Sultex Oil Co.'s No. 1 Wood, Jas. McGeehan Sur. T.D. 5,975 ft.; D.S.S.

Union Prod. Co.'s No. 56 Ray T. Hanson Sur.; (Pettus field). Wlx. test; 10¾-in. csg. 4,856 ft.; T.D. 8,990 ft.; perf. csg. 3,933-52 ft.; tstg.

Bell County

J. J. Cormas' No. 1 Jeff Ellis, Elizabeth Berry Sur. S.D. 493 ft.

Bexar County

C. G. Bigby and Pierce's No. 1 Kelso, F. Rodriquez Sur. T.D. 504 ft.; abd.

Joe Noake's No. 1 San Antonio Sub. Irrg. Farm, W. Miller Sur. 180. T.D. 780 ft.

Philtop O. & G. Co.'s No. 2-A Patton, Fernando Rodriguez Sur. T.D. 1,938 ft.; abd.

J. A. Tarver's No. 1 Florence Lam, Manuel de Luna Sur. 3. 6⅝-in. csg. 1,205 ft.; T.D. 1,602 ft.; cd. bkn. sh. 1,638-92 ft.; S.S.O.; bailed est. 10 bbl. oil P.D. before sanding up; abd.

Burleson County

H. Y. Barnett's No. 1 Giesenschlag, J. W. Hollingsworth Sur. T.D. 1,935 ft.; abd.

Caldwell County

J. E. Dickson's No. 1 Jeff Connolly, J. D.

TEXAS

Week Ended May 4

GULF COAST FIELDS

Anchor—Brazoria County

Humble O. & R. Co.'s No. 2 Mettler. Drlg. sh. 7,036 ft.

Glenn McCarthy's No. 1 Kate and Laura Yocum, J. D. Valderas Sur. T.D. 10,-544 ft.; 5½-in. lnr. 10,542 ft.

Sun Oil Co.'s No. 1 Morris Stern, Shubal Marsh Sur. 18⅝-in. csg. 128 ft.; drlg. sh.&L. 9,624 ft.

Old Ocean—Brazoria County

Harrison & Abercrombie's No. 1 Chenault, C. Breen Sur. Drlg. sd.&sh. 9,-310 ft.

Harrison & Abercrombie's No. 1 Mueller et al, M. M. Nuckols Sur. Drlg. sh. 3,-840 ft.

Harrison & Abercrombie's No. 1 A. F. Wilson, D. McCormick Sur. Drlg. sd.& sh. 9,306 ft.

Stanolind O. & G. Co.'s No. 2 Giles, C. Breen Sur. Drlg. sh.&L. 8,420 ft.

Stanolind O. & G. Co.'s No. 1 Hughes, C. Breen Sur. Cg. sd. 10,820 ft.

Stanolind O. & G. Co.'s No. 1 Stevenson-Donovan, Inia Keep Sur. 9⅝-in. csg. 7,039 ft.

Sun Oil Co.'s No. 4 Borsodi, C. Breen Sur. 13⅜-in. csg. 1,520 ft.; 9⅝-in. csg. 7,009 ft.; drlg. sh.&sd. 9,704 ft.

Sun Oil Co.'s No. 5 McCampbell, C. Breen Sur. Drlg. sh.&L. 8,120 ft.

Seabreeze—Chambers County

Sun Oil Co.'s No. 1 Felix Jackson, A. Y. Barbo Sur. 10¾-in. csg. 1,943 ft.; cg. 8,719 ft.

League City—Galveston County

Phillips Pet. Co.'s No. 1 Parr, Perry & Austin Sur., Lot 9. Drlg. sh. 3,436 ft.

Phillips Pet. Co.'s No. 4 Stewart Title Guaranty Co., S. F. Austin Sur. 10¾-in. csg. 3,520 ft.; 7⅝-in. csg. 9,510 ft.; T.D. 11,270 ft.; well blew out; killed; S.D.

Clear Lake—Harris County

Humble O. & R. Co.'s No. 44-C fee, G. B. McKinstry Sur. Loc.

Humble O. & R. Co.'s No. 45-C fee, Geo. B. McKinstry Sur. T.D. 5,918 ft.; tstg.

Humble O. & R. Co.'s No. 40-C West, Geo. McKinstry Sur. T.D. 5,908 ft.; tstg.

Friendswood—Harris County

Humble O. & R. Co.'s No. 23 West Prod. L. Hemenway Sur. 9⅝-in. csg. 1,039 ft.; drlg. sh. 5,090 ft.

Fannett—Jefferson County

Gulf Oil Corp.'s No. 4 Bordages, J. Probarth Sur. Drlg. sh. 8,144 ft.

Rains Sur. Drlg. Taylor marl 2,100 ft.
Kean & Williamson's No. 1 E. E. Rector, J. Roberts Sur. S.D. 1,100 ft.

Calhoun County

Coronado Corp.'s No. 1 K. Welder, Hidalgo Sur., 3 mi. SE Seadrift. "Tight well"; reported to be tstg.; 5½-in. csg. 9,750 ft.; perf. csg. 9,500-9,600-9,700 ft.; rec. S.W.; made sqze. job at 8,580 ft.; S.D.
Eura B. Oil Co.'s No. 1 T. P. Traylor, Sec. 3, I.&G.N. Sur. Loc.

Cameron County

Sal Vieja Oil Co. et al's No. 1 Garcia. Santa Isabel gr. 8⅝-in. csg. 8,322 ft.; drlg. sh. 8,496 ft.

Duval County

W. L. Catlin et al's No. 1 Louis Escapule, J. Poitevent Sur. 73. R.U.
Government Wells Oil Corp.'s No. 1 Lundell, J. Poitevent Sur., Sec. 364. Drlg. sdy. sh. 1,302 ft.
W. C. McBride, Inc.'s No. 2 Leal, J. Poitevent Sur., Sec. 461. T.D. 2,539 ft.; W.O.
Sun Oil Co.'s No. 1 Garcia, A.B.&M. Sur., Sec. 407. Cd. sd. 4,904-16 ft.; make D.S.T.

Gonzales County

M. T. Huebner's No. 1 M. P. Smith, R. Plummer Sur. T.D. 1,135 ft.

Guadalupe County

Knute Evjen's No. 2 Brawner, J. D. Pickens Sur. 10-in. csg. 21 ft.
F. W. Nute et al's No. 2 Howell, Jacob Darst Sur. Drlg. 3,080 ft.

Hidalgo County

Gulf State Oil Co.'s No. 2 Cardinas, San Salvador del Tule gr. 16-in. csg. 157 ft. T.D. 8,700 ft.; perf. csg. 8,450-62 ft.; flwg. gas and dist.

Jim Hogg County

Mike Butler's No. 1 Houghton Allen, Blk. 12, Sur. 49. Drlg. 3,350 ft.
R. W. Erwin's No. 1 Jauer, H.&G.N.R.R. Sur. 15. S.D. 3,510 ft.
French Oil Corp.'s No. 3 Pena, G. W. Rose Sur. 574. Loc.
Magnolia Pet. Co.'s No. 45 Merchants State Bnk., Sur. 267. Drlg. sd. 2,582 ft.

Jim Wells County

J. W. Calvert's No. 1 Spoetzle, Wm. Hobbs Sur. Drlg. sh. 2,637 ft.
Henshaw Bros.' No. 1 Blasehke, Casa Blanca gr. T.D. 5,603 ft. ;5½-in. csg. 5,175 ft.
H. H. Howell's No. 1 Garza, La Tinaja De Lara gr. 10¾-in. csg. 753 ft.; T.D. 7,087 ft.; abd.
H. H. Howell and Tesemelis' No. 1 D. C. Daniels, M. Berrera gr. Loc.
H. H. Howell and W. C. McBride, Inc.'s No. 1 E. Schreade, Casa Blanca gr., 2 mi. NE of Orange Grove. R.U.
M. M. Miller's No. 1 fee, Casa Blanca gr. Cg. sd. 5,982 ft.
Wm. Spice et al's No. 2 Schaller, Los Presnos de Abajo gr. Drlg. sh. 4,303 ft.
Windsor Oil Co.'s No. 1 Kusel, Casa Blanca gr. T.D. 5,012 ft.; abd.

Karnes County

Luling O. & G. Co.'s No. 1 Nilson, C. Martinez Sur. Drlg. 1,505 ft.

Kendall County

C. M. Dewey's No. 2 Seidensticker, R. Davis Sur. 20. S.D. 950 ft.

Kimble County

Austin Bridge Co.'s No. 1 Wilkinson, Brooks & Burleson Sur. Drlg. 570 ft.
J. C. Renfro's No. 1 D. C. Morales, Hrs. of H. Grote Sur. 423. T.D. 575 ft.
Schwab-Carlyle & Auld's No. 1 Baker, F. C. Stisser Sur. T.D. 1,490 ft.; fsg.

Kinney County

Cooper Gas Co.'s No. 1 L. L. Farr, Geo L. Bledsoe Sur. 835 ft. T.D. 2,505 ft.; abd.

Kleberg County

Skelly Oil Co.'s No. 1 State, Laguna de Los Olmos gr., Tr. 385. Rec. 294 ft. oil, 9½-min. D.S.T. 7,455-60 ft.; drlg. sh. 7,820 ft.

La Salle County

H. R. Cullen's No. 1 A. L. Washburn, L. W. Earnest Sur. 88. Drlg. 1,050 ft.

Lee County

Fred Pederson et al's No. 1 Brown, David Hudson Sur. T. Glen Rose L. 6,600 ft.; T.D. 8,202 ft.; prep. to run csg.

Live Oak County

W. R. Davis, Inc.'s No. 1 Nichols, Simeon Ryan Sur. 66. 7-in. csg. 80 ft.; drlg. 1,260 ft.
Humphries & Hotchkin's No. 1 Hamilton, H.&G.N. Sur. 3. 8-in. csg. 80 ft.; drlg. 1,520 ft.
E. M. Jones' No. 1 West, Lot 400, Blk. of West subd. T.D. 10,839 ft.; 6-in. csg. 9,596 ft.; perf. csg. 9,503-18 ft. and 9,485-9,503 ft.; swbd. gas; P.B.; prep. to test 7,600 ft.
Luling O. & G. Co.'s No. 2 R. F. Byler, A. A. Dinn Sur. 182. T.D. 4,817 ft.; abd.
Messer & Cage's No. 1 Kluver, S. E. Gilmore Sur. 406. 10-in. csg. 35 ft.; drlg. sh. 2,115 ft.
W. R. Quinn, et al's No. 1 Stolze, J. F. Huizar Sur. 31. Drlg. sh. 1,390 ft.
Smith & Storey's No. 1 Lyne, A.C.H.& B. Sur. 163. T.D. 1,318 ft.; fsg.
L. W. Stieren's No. 3 Lange, Thos. Adams Sur. T.D. 1,497 ft.

McMullen County

Tybro Roy. Corp.'s No. 1 F. B. Horton, Jas. M. Jean Sur. 29. T.D. 656 ft.; 5½-in. csg. 650 ft.
Van Dresar's No. 2 Brown, Sur. 54. Drlg. 190 ft.

Medina County

G. R. and L. J. Dorsey's No. 1 Robertson, John George Sur. 9. R.U.
Great Southern Exp. Co.'s No. 1 A. Muennick Sur. 5. S.D. 410 ft.

Nueces County

Continental Oil Co.'s No. 1 Davis, O.W. D.D.; drlg. sh. 7,343 ft.
Humble O. & R. Co.'s No. 1-D State, Laguna Madre Bay, Flour Bluff field. Drlg. 6,367 ft.
John Manley et al's No. 1 Ruegg, Geo. H. Pauls subd. of Driscoll ranch. Loc.
Pure Oil Co.'s No. 1 S. Little, S. Ward Sur. 194. R.U.
Richardson Pet. Co.'s No. 1 Studer, M. L. De Herrera gr. T.D. 7,524 ft.; 7-in. csg. 5,202 ft.; P.B. 4,550 ft.; rec. S.W. 4,575-95 ft.
Stanolind O. & G. Co.'s No. 1 State, C. M. Blucher Sur., Tr. 746. 1½ mi. S of E. White Point field. Loc.
Wellington Oil Co. and Seaboard Oil Co.'s No. 1 Swenson, Santa Petronilla Sur. Perf. csg. 5,300-21 ft.; prep. to acd.; T.D. 7,007 ft.; abd.
Yoakum & Gorman's No. 1 P. C. Nicks, Sh. 9, Casa Blanca gr. R.U.

Refugio County

C. L. Norsworthy's No. 1 T. C. Holeman, M. Reiley Sur. Spd.

San Patricio County

L. L. Smith's No. 1 Timon, Town Tr. of San Patricio, De Hibernia. Drlg. 5,239 ft.
Tide Water Asso. Oil Co. and Sinclair Prairie Oil Co.'s No. 1 Ragsdale, S. S. Gillett Sur. T.D. 7,817 ft.; abd.

Starr County

Glen Harroun's No. 1 Green & Manning, Juan J. Garza Falcon Porc. 81. Loc.
Lynes & Robertson's No. 1 Viliareal, C. C.S.D.&G.N.R.R. Sur. 241. Loc.
Magnolia Pet. Co.'s No. 3 Guerra, Santa Cruz gr. (La Reforma field). Loc.
Sun Oil Co.'s No. 1 W. G. Lehr, C.C.S.D. R.G.N.G.R.R. Sur. T.D. 5,313 ft.
Sun Oil Co.'s No. 1 Rodriguez, Santa Teresa gr. T.D. 7,502 ft.; tstg. 6,434-39 ft.; tstd. 2,100 lb. W.P.; 16-in. D.S.T.; perf. csg. 6,441-44 ft.; flwd. S.W. and gas; P.B.; perf. csg. 6,423-28 ft.; flwd. gas and dist.
Syndicate Oil Corp.'s No. 1 Sanchez, Santos Sanchez Sur. 344. T.D. 1,004 ft.

Travis County

J. H. Sprouls and A. G. Hinn's No. 1 A. D. Balm, Santiago de Valle gr. Drlg. 990 ft.
J. C. Tittle's No. 1 Darlington, Buckman Sur. 40. Drlg. 665 ft.

Val Verde County

Joiner Oil Co. et al's No. 1 Clyde Sellers. T.D. 1,848 ft.; S.D.

Victoria County

John Blaffer et al's No. 1 Edwards, D. Mira Sur. S.D. 6,265 ft.
British American Oil Co.'s No. 1 J. J. Warden, E. McDonough Sur. Loc.
Colton & Colton's No. 1 Terrell, J. B. Sideck Sur. S.D. 2,950 ft.
Humble O. & R. Co.'s No. 1 R. H. Welder, S.A.&M.G. Sur. 9. Drlg. 5,767 ft.
S. J. Ryan's No. 1 Bankers Mortgage Co., A. Esparza Sur., Lot 1, Blk. 2. 10¾-in. csg. 601 ft.
Geo. Smith's No. 1 Reiman, M. Zepeda Sur. Drlg.
Texas Gulf Prod. Co.'s No. 1 Kester, C. M. Creanor Sur. Drlg. sh. 6,130 ft.

Webb County

H. E. Hall's No. 1 Slator, Mission Oil Co., J. V. Borrego gr. T.D. 100 ft.
Interstate Minerals, Inc.'s No. 46 Lopez, J. J. T. Wright Sur. 309. T.D. 2,185 ft.; 5½-in. csg. 2,173 ft.; I.P. 80 B.P.D.; open tbg.; tstg.
W. C. McBride's No. 1 Leal, J. Poitevent Sur. T.D. 2,568 ft.; abd.
M. L. Massingill's No. 2 Kirkpatrick, C. C.S.D.&R.G.N.G. Sur. 59. Loc.
Sinclair Prairie Oil Co.'s No. 1 Callaghan Ld. & Cattle Co., B.S.&F. Sur. 585. 13⅜-in. csg. 1,598 ft.; drlg. sh. 8,585 ft.
Tide Water Asso. Oil Co.'s No. 8 Bruni, M. Arispe gr.; (deep test, Bruni field). Loc.

Williamson County

Jas. Criswell's No. 1 R. Z. Baker, Theophilis W. Metcalf Sur. S.D. 70 ft.
C. C. Lanier's No. 1 Guental, Harry Cooke Sur. R.U.
C. D. Lane's No. 1 Krieg, H.T.&B. Sur. 3. Drlg. L. 1,410 ft.
Richardson & Lefors' No. 1 Kutzschbach, P. J. Mahan Sur. 115. Drlg. clk. 665 ft.

Wilson County

W. D. Moore et al's No. 1 Lorenz, Morris May Sur. S.D. 75 ft.

Zapata County

Jack Giblin et al's No. 1 Haynes, Villa gr. Loc.
J. P. Martin et al's No. 1 Serapio Vela, El Grullo gr. T.D. 3,500 ft.; P.B. 2,843 ft.; perf. csg. 2,375-2,400 ft.; swbd fresh wtr.; S.D.

E. C. TEXAS WILDCATS

Anderson County

R. H. Williamson's No. 1 O. G. Rogers Wm. Greenwood Sur., 6 mi. SW of Elkhart. Had gas blowout 4,380-90 ft.; under control; est. 30,000,000 cu. ft. gas; flwg. through separator 5,407 ft. making 125 bbl. dist. dly.; made 467 bbl. dist. in 7 days; tstg.

Angelina County

Arkansas Fuel Oil Co.'s No. 1 Carter-Kelly, T.&N.O. Sur. 4. Loc.
K. L. McHenry's No. 1 Redditt-Fairchilds, 2,700 ft. S and 1,200 ft. E lines of T.&N.O. Sur., 10 mi. SE of Copestown. R.U.

Camp County

W. C. McGlothlin's No. 1 Venters, S. Wright Sur., 3 mi. SE Leesburg. R.U. to D.D. to Pett. zone; prep. set csg. to test show in Pett. L. 7,943-90 ft.; had 47 ft. of sat. and por.; S.D. for title trouble at 8,087 ft.; well has not been opened.

Cherokee County

C. C. Lanier's No. 1 W. O. Reagan, W. T. Smith Sur., 2½ mi. E of Mixon. Drlg.
R. D. Salisbury's No. 1 W. M. Shankle, J. A. Manchaca Sur., 1½ mi. NE Chilton. P.B. 1,103 ft.; S.D.; W.O.

Falls County

M. Hays' No. 1 A. N. Taylor, F. Mahan Sur., 1 mi. NE of Lott. Topped Buda 1,175 ft.; W.O.C. 1,204 ft.

Fannin County

C. Newburn's No. 1 A. G. Allen, M. Caldwell Sur., 7 mi. NE of Banham. R.U. and S.D.
Mrs. A. B. Powell's No. 1 Maude Barker, T. Harrison Sur., 9 mi. N of Bonham, SE cor. 42-ac. tr. S.D. 10 ft.

Freestone County

C F. W. Young's No. 1 Ray Simmons, M. DeCantona Sur., 1½ mi. W of Simmsboro. S.D. 2,872 ft.

Gregg County

Roger Lacy's No. 1 Lacy, S. P. Ford Sur., 3 mi. SW of Longview; deep Trinity gas test. Drlg. 6,573 ft.

Henderson County

W. R. Manning's No. 1 Brown, Thomas Meux Sur., 1 mi. SW of Rowe & Baker area. S.D.R. 2,650 ft.

Houston County

G. L. Dixon's No. 1 B. R. Crowson, J. Cheairs Sur., 5 mi. NW of Lovelady. Loc.
Elmer Hay, Tr.'s No. 1 Starr Pope, J. Forbes Sur., 2 mi. S of Lovelady, NW cor. 162-ac. tr. S.D. 100 ft.

Kaufman County

W. H. McGee's No. 1 Rutland Savings Bnk., John Baker Sur., 2¼ mi. NE of Tulosa. S.D. 3,080 ft.
T. G. Shaw, Tr.'s No. 1 Angus Wynne, B. S. Newman Sur., 8 mi. E. Kaufman. lower Trinity test. Drlg. 4,835 ft.

Leon County

Alexander & Wilhite's No. 1 C. H. Mills, M. Copeland Sur., 2½ mi. E of Normangee. M.I.M.

McLennan County

T. M. Smart's No. 1 J. W. Mann, C O'Campo Sur., 4 mi. S of Waco. S.D. 1,327 ft.

Nacogdoches County

Melrose Oil Co.'s No. 1 C. N. Wilson, J. Hall Sur., 10 mi. SE of Nacogdoches. Rmg. 2,310 ft.

Navarro County

C. F. Carter's No. 1 Allen Eden, M. Shire Sur., 2 mi. NE of Angus. Bailing. wtr.; S.S.O.; 1,201 ft.
Guy Sitton's No. 2 R. D. Fleming, John Harris Sur., 450 ft. E of No. 1 dry hole. Bailed S.S.O. and S.D. for test at 1,625 ft.
W. H. Warren's No. 1 L. Grey, E. Powers Sur., 9 mi. SE of Kerens. S.D. 660 ft.; T.D.

Robertson County

Rhett Wilder's No. 1 Moise Cerf, J. Erwin Sur., 7 mi. S of Franklin. S.D. 1,480 ft.

Rusk County

Jeff Bolton's No. 1 Hall Wood, J. I. Sanches Sur., 2½ mi. NW of New Salem. Lost circ. and skd. rig to start new hole; T. Wdbne. with sat. at 4,145 ft.; S.S.O. 4,201 ft.; showing small amt. gas between surf. csg. and oil string; T.D. 4,201 ft.
J. S. Harrell's No. 1 Citizens Natl. Bnk., M. C. Carmell Sur., 2½ mi. SE Henderson. O.W.D.D.; R.U. to dpn. below 6,802 ft.; W.O.C. 6,802 ft.
A. O. Whittington's No. 1 Kangerga Bros., Ign. Castro Sur., 9½ mi. N and slightly E of Pirtle. S.D. 300 ft.

Smith County

Carmerson Corp.'s No. 1 T. Simpson, R. Walter Sur., 3 mi. NE of Winona, SE cor. of 1,234-ac. tr. Drk.; R.U.
Sun Oil Co.'s No. 1 E. B. Huddle, Wm. Dickerson Sur., 2 mi. S of discovery dist. producer in Chapel Hill area; third D.S.T. failed; may test again or may P.B. to Glen Rose L.; sat. drld. from 7,983-8,019 ft.; T. Pett. 7,930 ft.; T. Tr. Pk. 8,090 ft.; tstg.; T.D. 8,226 ft.; est. 5 B.O. with wash wtr.; prep. drill plug at 8,226 ft.; P.B. 8,183 ft.; making 25 bbl. dist. and 250,000 cu. ft. gas daily, Rodessa section; making 125 bbl. dist. and 3,000,000 cu. ft. gas daily; completing for 155 bbl. dist. dly.

Van Zandt County

J. B. Daniels' No. 1 W. R. Odom, J. Garcia Sur., 4 mi. NE of Mabank. Drlg. 3,547 ft.
E. L. Shackelford's No. 1 E. J. Combs, J. Wright Sur., 3½ mi. NW of Grand Saline. S.D. 54 ft.

EAST TEXAS

(Border Counties)

Cass County

Joe Griffin's No. 1 W. H. Daniel, 715 ft. EL, 360 ft. SL, 101-ac. tr., W. Pittman Sur. Set surf. csg.; W.O.C.
K. E. Jennings' No. 1 H. T. Wood, Sec. 23-18-28. Set surf. csg.; W.O.C.
E. A. Stiller et al's No. 1 Glass, John Paxton Sur. Set 10-in. csg.; drlg. 3,712 ft.

Harrison County

Ark. La. Gas Co.'s No. 1 Isaac, Little Sur. Drlg. sh.&L. 3,037 ft.
Fons Oil Co.'s No. 1 R. L. Sypert, R. Hooper Sur. Set 10¾-in. csg.; cg. sh. &L. 4,557 ft.
J. A. Hughes' No. 1 Taylor, H. McNutt Sur. T.D. 2,612 ft.; W.O.S.R.

Marion County—Other

B. I. Daniels' No. 1 T. O. Livingston, G. Coore Sur. T.D. 2,330 ft.; W.O. csg.
T. B. Donnell's No. 1 E. W. Fasterling, 330 ft. S, 1,200 ft. W, NE cor. 200-ac. tr., M. G. Nail Sur. T.D. 2,341 ft.; set 5½-in. csg. 2,234 ft.; W.O.S.R.
H. H. Groneman's No. 1 Tom Burks, Gaines Coore Sur. T.D. 2,500 ft.; W.O. S.R.
J. M. Horne's No. 1 W. F. Singleton, 1,331 ft. EL, 50 ft. NL, J. O. Jackson Sur. R.U.
H. T. Manning's No. 1 T. O. Livingston, G. Coore Sur. Plts.
J. D. Reynolds' No. 5-B Terry est., W. Coore Sur. R.U.
Sentinel Oil Co.'s No. 1 W. Taylor, 700 ft. N, 325 ft. W, SE cor. B.B.B.&C. R.R. Sur. Set 10-in. csg. 45 ft.; hole off 12° at 700 ft.; P.B. 45 ft.; W.O.C.
Texas Canadian Oil Co.'s No. 1 W. Mackey, L. Needham Sur. Set 5½-in. csg. 2,297 ft.; W.O.C.

Marion County—Rodessa

C. M. Beckett's No. 1 Perry, 466 ft. NW cor. Perry 126-ac. tr., C. Grayson Sur. Set 5½-in. csg. 6,120 ft., T.D.; perf. 6,106-16 ft.; acd. with 1,000 gal.; tstg.
Holcomb & Thomason's No. 1-A Madine, 400 ft. WL, 467 ft. NL, 33.6-ac. tr., A. D. S. Coy Sur. Set 9⅝-in. csg. 1,840 ft.; Hill sd. 5,979 ft.; Gloyd 6,092 ft.; set 6-in. csg. 6,118 ft.; perf. and acd. 6,096-6,112 ft. and tstd. est. 30,000,000 cu. ft. gas; S.D.; W.O.; T.D. 6,118 ft.

Sabine County

Charlotte Oil Co.'s No. 1 Santa Tie & Lbr. Co., 400 ft. SL, 500 ft. EL, 53-ac. tr., L. Grace Sur. Drk.

Shelby County

Earl McDaniels et al's No. 1 J. S. Swann, 470 ft. EL, 1,400 ft. SL, 100-ac. tr., Ann Gray Sur. T.D. 2,378 ft.; 9⅝-in. csg. 585 ft.; W.O.C.
P. & B. Oil Co.'s No. 2 W. C. Windham, A. K. English Sur. Set 10-in. csg. 170 ft.; W.O.C.
W. C. Parker's No. 1 F. G. Willey, 480 varas NL, 240 varas EL, 94-ac. tr., A. K. English Sur. R.U.

WEST CENTRAL TEXAS DISTRICT

Brown County

J. J. Poteet's No. 1 R. L. Williams, NE NE, J. F. Roberts Sur. 470. Mch.
C. H. Robertson's No. 1 McGary & Gibbs, 160-ac. tr. in middle Sec. 1, H.T.&B. Sur. Drlg. 724 ft.
A. M. Staicup's No. 1 J. C. Morris, 900 ft. S, 700 ft. E lines of Morris tr. in John Goodwin and W. B. Hester Surveys, S.D. csg. 972 ft.
M. R. Staurd's No. 1 E. Hennigan, NW M.E.P.&P. Sur.; 1,000-ft. test. S.D. csg. 961 ft.

Callahan County

D. Fox and E. L. Dunn's No. 1 A. and G. Berry, NE pt. Sec. 78, B.O.A. Sur., 950-ft. test. S.D.O. 910 ft.
N. D. Gallagher's No. 1 E. Grisson, SE pt. Sec. 2, Blk. 8, S.P. Sur. Spd. & S.D.
E. Johnson's No. 3 M. Hughes, SE cor. NE NE Sec. 127, B.B.B.&C. Sur. Loc.
C. J. Kleiner's No. 1 R. D. Williams, 183 ft. N, 2,631 ft. E of N and E lines, Sec. 62, B.O.A. Sur.; 1,200-ft. test. Drlg. 625 ft.
W. Lee's No. 1 H. W. Ross, 2,420 ft. W. 1,540 ft. S lines Sec. 98, B.B.B.&C. Sur. C.O. 1,515 ft.
C. A. Redmond's No. 1 H. T. Moore, SE cor. NE Sec. 9, Blk. 6, S.P. Sur.; 2,000-ft. test. Drlg. 1,925 ft.
J. L. Reeves' No. 1 N. A. Estes, SW¼ Sec. 4, Blk. 8, S.P. Sur., 2½ mi. S of Bowles pool. M.I.M.

Coleman County

Anzac Oil Corp.'s No. 1 McCord, 2,200 ft. E, 2,196 ft. S of B.B.B.&C. Sur. U.R. 1,799 ft.
J. C. Ort's No. 1 Emet Walker, SE cor. Hicks Sur. W.O.C. 700 ft.
J. W. Quinn, Tr.'s No. 1 Duty & Stevens, SE cor. Sec. 25, H.T.&B. Sur.; 1,800-ft. test. Drlg. 800 ft.
Robertson & Bradford's No. 1 Morris, 330 ft. N, 1,582 ft. W lines, Blk. 2, G.H.&H. Sur. Prep. test; Gardner sd.

topped at 3,530 ft. with sat.; awaiting official ga.; making about 6,000,000 to 7,000,000 cu. ft. gas daily with no oil; gaged only gas, 5,750,000 cu. ft.

Comanche County

H. S. Bassart's No. 1 J. H. Tate, NW cor. J. M. Robinson Sur., Abst. 1170; 900-ft. test. Drlg. 715 ft.

Coryell County

Kistler O. & G. Co.'s No. 1 Barnes, 360 ft. SE line, 3,700 ft. NE line of H. Farley Sur., 3 mi. NE of Gatesville; 2,500-ft. test. Drlg. 815 ft.

Eastland County

Dobbs Oil Corp.'s No. 1 Mrs. R. L. Poe, 1,320 ft. from S and E lines, of SE¼ Sec. 37, Blk. 3, H.&T.C. Sur. Drlg. 910 ft.

Dobbs Oil Corp.'s No. 1 Thomasson, S. H. Key Sur., 330 ft. from N. 846 ft. from E line of 80-ac. tr. U.R. 1,155 ft.

States Oil Corp.'s No. 1 V. N. Owens, NE Sec. 23, Blk. 2, T.&N.C. Sur. Drlg in Ellenberger below 4,334 ft.

Steele & Black's No. 1 B. B. Poe, 150 ft. N and E lines, SE¼ Sec. 6, Blk. 2, H.&T.C. Sur.; 900-ft. test. Drlg. 135 ft.

Erath County

Dillingham's No. 1 Morning. S.D.O. 3,-450 ft.

T. G. Jackson's No. 1 J. W. Taylor, Prater Sur., Abst. 1029, 4 mi. NE of Desdemona. Est. 15 to 20 B.O.P.D. at 3,-360-75 ft.; S.D. 3,395 ft.; not treated. rig burned; U.R. new mch. 3,395 ft.

E. H. Young's No. 1 J. B. Mills, J. Harry Sur., 5 mi. NW of Dublin; 3,500-ft. test. M.I.M.

Hamilton County

A. J. Caldwell's No. 1 W. W. Jones, 1,002 ft. from NE, 150 ft. from SE lines of W. H. Crowder Sur. Drlg. 2,480 ft.

Wallace & Wallace's No. 2 C. E. Lund, C S½ E 20 ac., N½ SW¼, R. J. Bailey Sur. 51. Csg. 300 ft.; S.D. csg. 3,265 ft.; T. Marble Falls 3,245 ft.; S.D.O. 3,-318 ft.; wtr. and no oil.

Jones County

Geo. Callihan's No. 1 J. J. Steele, NE cor. SE Sec. 11, Blk. 15, T.&P. Sur. Loc.

Erin Pet. Co.'s No. 1 J. M. Caton, Sec. 4, Orphan Asylum Lds. Tstg. sat. 3,360-3,404 ft.; P.B. 3,390 ft.; flwd. only sul. wtr.; shot 15 qt.; no results; S.D.O. 3,404 ft.

J. E. Farrell's No. 1 F. B. Reid, NW¼ Sec. 31, D.&D. Sur.; 3,500-ft. test. T.D. 2,429 ft.; comp. for new discovery for 20 to 30 B.P.D. from L. at 2,568-70 ft. making 12 to 15 B.P.D.

Humble O. & R. Co.'s No. 1 Ed Clift, 453-ac. tr. in E½ of Ambrose Crain Sur. 214. Drlg. 5,660 ft.

J. C. Hunter's No. 1 J. Sayles, SE N½ Subd. 8, R. Smith Sur. 192, just NE of Hawley; 3,300-ft. test. Loc.

Iron Mountain Oil Co.'s No. 1 I. F. Wiley, 330 ft. from S and E lines SW¼ Sec. 14, Deaf and Dumb Ld. S.D.O. 4,025 ft.

Jones & Stasney's No. 1 B. C. Humphrey, SE cor. SW Sec. 192, B.B.B.&C. Sur., 1 mi. N of Avoca field. Drlg. 3,294 ft.

Keeler's No. 1 Radford, SE¼ Sec. 20, Blk. 4, H.&T.C.R.R. Sur. Fsg. 1,888 ft.

M. R. Mead's No. 1 E. Hicks, SE cor. Sec. 5, O.A.L. Sur.; 3,500-ft. test. Mch.

Merry Bros. & Perini's No. 1 C. S. Walker, SE cor. Walker tr., G. Martinez Sur. 137. Loc.

J. D. Sandefer, Jr.'s No. 1 Hudspeth, 160-ac. tr. in Subd. 22, Edw. Miles Sur. 219. Loc.

W. I. Southern's No. 1 A. A. Hayden, G. Martinez Sur., S of Anson on west side of Prichard pool; 4,000-ft. test. C.O. after acd. 2,488 ft.; only wtr.; prep. to D.D.

Palo Pinto County

Fred Guyer's No. 1 Dalton, Dalton Sur., Abst. 153; 1,400-ft. test. Loc.

E. P. Wilson's No. 1 F. M. Watson, NW pt. of Sec. 10, Blk. 2, T.&P. Sur.; 3,-250-ft. test. Fsg. 4,065 ft.

Parker County

Brown & Gardner Bros.' No. 1 Gilbert, T.&P. Sur., Abst. 1958. Tstg. gas; prep. D.D.

E. R. Marchman's No. 1 G. W. Keeling, F. Lidely Sur., Abst. 829, 1½ mi. W of Springtown; 3,500-ft. test. Recontracted to 2,400 ft.

Runnels County

Davis' No. 1 Summers, W½ of tr. in Day Ld. & Cattle Co. Sur., W of Beddo field, H.F. S.W.; may P.B.; T.D. 3,-624 ft.

J. E. North's No. 1 J. W. Reese, Day Ld. & Cattle Co., 2½ mi. S of McCullen. W.O.C. 2,030 ft.

Homer Price's No. 1 Williams, C S½ Sec. 26, D. Diaz Sur., N outpost to Beddo field. S.D.O. 2,561 ft.

Shackelford County

T. L. Blanton's No. 1 W. F. Tucker, SW Sec. 552, T.E.&L. Sur. Loc.

John E. Carson's No. 1 R. A. Elliott, 660 ft. S and E lines, Sec. 48, B.A.L. Sur.; 3,650-ft. test. Prep. D.D. 26 ft.

Georgian Oil Corp.'s No. 1 Black ranch, C NE¼ of T.E.&L. Sur. 390. 10 mi NE of Albany; Ordovician test. T.D. 4,825 ft.; P.B. to Caddo L. for test at 3,860-3,915 ft.; T. Ellenburger 4,730 ft.; prep. P.B. 3,915 ft.

August P. Schkade's No. 1 J. L. Godwin, NE Sec. 385, T.E.&L. Sur. Loc.

Swann & Gorsuch's No. 1 Sam Lazarus, SE SE Sec. 80, Blk. 13, T.&P. Sur. Drlg. 1,287 ft.

L. T. Terry's No. 1 W. A. Green, NW cor. S½ NE Sec. 64, Blk. 12, T.&P. Sur. S.D.O. 1,250 ft.

Stephens County

Guy Ewing's No. 1 Crudington, SE cor. T.E.&L. Sur. 1268, 5½ mi. S of Stribling field. Drlg. 2,825 ft.

Jones Bros. Drlg. Co.'s No. 1 T.X.L., 660 ft. N and E lines SE Sec. 3, Blk. 3, S.P. Sur.; 4,050-ft. test. Drlg. 3,400 ft.

Panhandle Ref. Co.'s No. 1 Frank Magers, SE Sec. 1, Blk. 3, S.P. Sur., 1¾ mi. N of Fagg area. Prep. to drill around bailer 3,950 ft.

Pitzer & West and Brazos-Young Oil Corp.'s No. 1 H. Compton, SW SW Sec. 9, O.A.L. Sur., 1 mi. SE of Loving pool; 3,600 ft. test. Swbg. after acd. at 3,428 ft.

J. R. Tolbert's No. 1 W. L. Martin, NW cor. NE¼ Blk. 1335, T.E.&L. Sur., 1½ mi. SW of Fagg area. W.O.C. 1,100 ft.

Andrew Urban, Jr.'s No. 1 T. T. Brooks, 150 ft. N and W lines of NE 40 ac. of 106-ac. tr. in Sec. 90, University Lds. Sur. Loc.

Taylor County

Green & Owens' No. 1 J. Bettes, R. Ortiz Sur. 19; 2,500-ft. test. Spd. and S.D.

Hose's No. 1 Bond, NE NE Sec. 40, Blind Asylum Lds., 2 mi. SW outpost to Bowles field. Drlg. 4,712 ft.

Texas Pacific Coal & Oil Co.'s No. 1 N. A. Reidenback, 990 ft. from N and W lines of Lot 19, Lge. 146 County Sch. Lds. S.D.; prep. abd. 3,275 ft.

Tal Vez Oil Co.'s No. 1 Rister, C S½ Sec. 1, SE Guadalupe C.S.L. Sur. Drlg. 2,-444 ft.

WEST TEXAS WILDCATS

Andrews County

Helmerich & Payne, Inc.'s No. 1 University, Sec. 11, Blk. 11, University Sur.; 5,500-ft. test. Drlg. 3,920 ft.

Illinois Oil Co.'s No. 1 University, Sec. 14, Blk. 12, Univ. Sur. Fsg. 4,920 ft.

Crane County

Gulf Oil Corp.'s No. 5 M. B. McKnight, Sec. 1, Blk. 21-B, P.S.L. Sur. S.D.O. 6,401 ft.

Gulf Oil Corp.'s No. 1-F University, SE SE Sec. 22, Blk. 31, Univ. Sur. Loc.

Gulf Oil Corp.'s No. 1-K University, 330 ft. N and E lines, Sec. 2, Blk. 31, University Sur. S.D.O. 3,424 ft.

Gulf Oil Corp.'s No. 12 Waddell, Sec. 30, Blk. 26-B, P.S.L. Sur. 12-in. 532 ft. S.O. 3,215-20 ft.; S.S.G. 3,635 ft.; 8-in. csg. cmtd. 3,713 ft.; S.O. wtr. 3,763 ft. tstg. 3,780 ft., mostly wtr.; S.D.R. 3,-875 ft.

Gulf Oil Corp.'s No. 31 Waddell, Sec. 5, Blk. 24-B, P.S.L. Sur. Drlg. 1,675 ft.

Crockett County

Clark & Cowden's No. 1 G. D. Atwood, Sec. 49, Blk. H.H., G.C.&S.F. Sur. Drlg. 2,165 ft.

Continental Oil Co.'s No. 3 Todd unit, Sec. 29, Blk. WX, G.C.&S.F. Sur., E offset to discovery well. Drlg. 5,355 ft.

M. & M. Drlg. Co.'s No. 1 G. Bouscaren, SE cor. NW Sec. 29, Blk. G.G., H.E.& W.T. Sur., 1 mi. N of Soma discovery well Drlg. 490 ft.

Mauldin & Solmon's No. 1 Noelke, SE cor. Sec. 56, Blk. G.G., H.E.&W.T. Sur., ¾ mi. NW of Soma discovery well. R.U.M.

Moore Explin. Co.'s No. 1 A. C. Hoover, Sec. 16, Blk. 1, G.C.&S.F. Sur. Rng. 8¾-in. csg. 350 ft.

Moore Explin. Co.'s No. 1 Noelke, Sec. 10, Blk. G.G. Drlg. 1,320 ft.

Soma O. & G. Synd.'s No. 1 W. T. Noelke, NW part Sec. 30, Blk. GG, H. E.&W.T. Sur. Hit sat. at 1,035 ft.; 60 B.P.H. with 40,000,000 cu. ft. gas; bldg. storage; est. 50,000,000 cu. ft. gas and only spray oil.

Dawson County

Ray Albaugh's No. 2 Robinson, NW NW Sec. 54, Blk. M, E.L.R.R. Sur. Drlg. 2,775 ft.

Ector County

Everts Drlg. Co.'s No. 1 J. L. Johnson, Sec. 30, Blk. 43, Twp. 1s, T.&P. Sur. Drlg. 2,650 ft.

M. A. Grisham et al's No. 1 R. B. Cowden, 600 ft. from N and E lines, Sec. 4, Blk. 45, Twp. 1n (deep test), T.&P. R.R. Sur. P.B. 4,490 ft.; making est. 6 B.O.P.D.; tstg.

Gaines County

Richmond Drlg. Co. et al's No. 1 G. R. Brumley, NE NE Sec. 17, Blk. 12-A, P.S.L. Sur. Loc.

Hockley County

Denver Prod. & Ref. Co. and Helmerich & Payne, Inc.'s No. 1 Whiteface Farms, 660 ft. from S and E lines Labor 22, Lgt. 77, Reeves C.S.L. Sur. Had 72 ft. of sat.; drld. plug and found no show; T.D. 4,796 ft.; tstd. sulf. wtr.; D.P. stk. 4,794 ft.

Mitchell County

Ewing & Hanes' No. 1 G. I. Grable, Sec. 195, Blk. 3, H.&G.N. Sur.; 1,800-ft test. Rng. 7-in. csg. 1,486 ft.

N. V. Hilburn's No. 1 B. W. Jackson, NE cor. NW Sec. 82, Blk. 97, H.&T.C. Sur., in same section as No. 1 Strain. Loc.

N. V. Hilburn's No. 1 E. T. Strain, Sec 82, Blk. 97, H.&T.C. Sur. S.D.O. 1,790 ft.; drld. sat. 1,706-32 ft. and 1,736-39 ft.; est. 4 B.O.P.D. naturally.

Pecos County

Humble O. & R. Co.'s No. 1 Young, Sec. 33, Blk. 10, H.&G.N. Sur. Top detrital 5,185 ft.; T. Simpson 5,624 ft. after logging 504 ft. of detrital; drlg. 7,334 ft.

Reeves County

Roy Johnson's No. 1 H. L. Perkins. Drlg. 337 ft.

Scurry County

Coffield & Guthrie, Inc.'s No. 1 J. W. Moar, Sec. 334, Blk. 97, H.&G.N. Sur., NW Sec.; 4,500-ft. test. Drlg. 2,122 ft.

Stonewall County

Shell Oil Co., Inc.'s No. 1 Smith, Sec 143, Blk. 1, H.&T.C. Sur. Drlg. 5,850 ft.

Terry County

Geo. P. Livermore's No. 1 M. E. Jacobson, Sec. 6, Blk. 11-D, C.&M. Sur. T.D. 5,030 ft.; prep. to drill in; T. sat. 4,992 ft.; making 25 B.P.H. after 2,-500-gal. acd.; prep. comp.

Tom Green County

B. C. Mann's No. 1 Joe Funk, 330 ft. N, 1,650 ft. E lines, Sec. 34, Blk. 5, H.& T.C. Sur. U.R. at 1,370 ft.; prep. P.B.; T.D. 1,562 ft.; H.F.W.

Dan Short's No. 1 J. G. Davidson, 2,-161 ft. from SL, 2,493 ft. from NW cor. L. P. Moore Sur. S.S.O.&G. 2,600-65 ft.; drlg. up bailer 3,325 ft.

Upton County

B. C. & D. Dev. Co.'s No. 1 Richard Owens, NE NW Sec. 91, Blk. Y, G.C. &S.F. Sur. R.U. spudder.

Ward County

Atlantic Ref. Co.'s No. 1 Wickett-University, Sec. 12, Blk. 16, University Lds. Sur., 1,980 ft. N and E lines of section. Prep. D.D. 2,733 ft.; S.S.O. 2,570-2,677 ft.; est. 380,000 cu. ft. gas.

Gulf Oil Corp.'s No. 5 Wristen, Sec. 13, Blk. 5, H.&T.C. Sur.; scheduled Ordovician test. Drlg. 6,731 ft.; tight well.

Kenneth Slack's No. 1 Bird Hayes, Sec. 148, Blk. 34, H.&T.C. Sur. T. Delaware 5,003 ft.; S.D. 5,010 ft.; T. Dela. sd. and hit est. 15,000,000 cu. ft. gas at 5,050 ft. and gas ignited; making 10,-000,000 cu. ft. gas daily; under control; fire put out; R.U. mch. to D.D.; 5,063-ft. test.

TEXAS PANHANDLE

Childress County

Texas Co.'s No. 1 P. B. Smith, NW NW Sec. 97, Blk. 9, H.&G.N. Sur. R.U.R.

Hall County

Humble Oil & Ref. Co.'s No. 1 A. D. Weaver, SW NW Sec. 51, Blk. 1, S.P. Sur.; 7,500-ft. test. Loc.

Hutchinson County

Jake Phillips' No. 1 McCloy, Sec. 101, Blk. 5-T, T.&N.O. Sur. Hole filled 2,000 ft. with oil; swbg.

Ochiltree County

James R. Macon et al's No. 1 W. R. Norris, SW SE Sec. 212, Blk. 43, H.&T.C. Sur. T.D. 6,274 ft.; test sec. at 5,000 ft.; est. 6,000,000 cu. ft. gas on D.S.T.; tstg.; bailing 6,274 ft.; csg. cmt. at 5,000 ft.; R.U. control head for testing at est. 6,000,000 cu. ft. gas; plug drilled; preparing to test below 5,000 ft.

Potter County

Canadian River Gas Co.'s No. 1 City of Amarillo, in city limits just north of city. Drlg. 4,610 ft.

Sherman County

I.T.I.O. Co.'s No. 1 S. C. Bryant, C NW¼ Sec. 369, Blk. T-1, T.&N.O. Sur. R.U.S.T. for test below 4,200 ft.

NORTH TEXAS WILDCATS

Archer County

L. T. Burns' No. 1 Mrs. J. Turberville, NW cor. Blk. 154, Robt. Carson Sur., Abst 80; (Caddo lime test). Loc.

W. H. Gant's No. 1 A. Vogtsberger, Sec. 3, G. E. Co. A-146 Sur.; 5,200-ft. test. O.S. 4,659-71 ft.; L.S.O. 5,257-69 (cd.) ft.; prep. to D.D.

E. F. Scott's No. 1 York, SE cor. SW¼ Sec. 1861, T.E.&L. Sur. Spd. & S.D.

Baylor County

Paul B. Scott et al's No. 1 C. H. Farr, Sec. 228, T.&N.O. Sur.; 3,100 ft. test. S.D. 2,080 ft.; reprs.

Hattie B. Madden's No. 1 J. J. James, 2,000-ft. test located 1,650 ft. from N and 150 ft. from E lines of Sec. 150, T.&N.O.R.R. Sur. S.D.O. 1,308 ft.

Clay County

L. T. Burns' No. 1 Tom Watson, Sec. 2631, T.E.T. Sur.; (3½ mi. SE Shell's Henderson discovery). Spdg.

Walter Gant's No. 1 Edwards, S. C. Beldon Sur., Abst. 12, 4 mi. E of Henrietta. W.O.S. to C.O.

Alexander Goldsmith's No. 1 Republic Nat. Gas Co., 312 ft. N, 495 ft. W lines of Blk. 14, Parker Co. Sch. Ld. Sur., 1 mi. S of town of Petrolia; 4,500-ft. test. 6⅝-in. 2,402 ft.; W.O.C.

S. D. Johnson et al's No. 1 R. H. Oliver, Sec. 2646, T.E.L. Sur.; (3 mi. SW of Shell's Henderson discovery). Loc.

Shell Oil Co., Inc.'s No. 1 Davis, Sec. 93, J. H. Belcher Sur. O.W.D.D.; L.S.O. 5,-687-5,720 ft.; taking D.S.T.

Staley Oil Co.'s No. 1 D. J. Percifield, Sec. 37, Belcher subd.; 5,000-ft. test. Drlg. 4,676 ft.

Carlos Wagner's No. 1 L. C. Thaxton, 3,630 ft. S, 330 E lines of 301-ac. tr., W.C. Donley Sur., Abst. 129, Sec. 4; 5,000-ft. test. Spd. and S.D.

Cooke County

Cranfill & Staley's No. 1 S. H. Peery, SW B.B.B.&C. Sur., Abst. 145. S.D. 2,505 ft.

C. E. Marshall et al's No. 1 Mrs. H. M. Stork, Sec. 13, B.B.B.&C. Sur. A-155; 5,200-ft. test. L. 4,648-55 ft.; stain oil; S.D.O. 4,885 ft.

Cottle County

J. E. Burns et al's No. 1 J. E. Moss, Sec. 5, Blk. L, A. Forsythe Sur. Jnkd. 225 ft.; skd. 20 ft. S; S.D. 1,823 ft.

Denton County

Jones Drlg. Co.'s No. 1 H. Chapman, L. Moore Sur., Abst. 824. T.D. 1,800 ft.; P.B. 1,634 ft.; to perf. csg.; O.S. 1,609-15 ft.; P.O.P.

Shooks & Finnell's No. 1 Sanders, 5½-in. 1,995 ft.; drlg. plug; sat. L. 2,013-45 ft.; acd. 1,000 gal.; shot 50 qt.; no results.

Foard County

Domain Oil Co.'s No. 1 Wilson, Marshall Univ. Sur. Drlg. 3,595 ft.

Hardeman County

Noah Daves' No. 1 K. D. Baker, Sec. 2,709, T.E.&L. Sur. Fishing 3,166 ft.

Norris & Gilbert's No. 1 Robert Weekley, SW SE Sec. 87, Blk. 16, H.&T.C. Sur. S.D. 3,101 ft.; fuel.

Jack County

Harper Pet. Co.'s No. 1 J. W. Kinder, SW¼ Sec. 2667, T.E.&L. Sur., Abst. 762. T.D. 2,160 ft.; S.D.

H. R. Smith's No. 1 I. G. Yates, SW cor. John Holderman Sur., 6 mi. NW Jacksboro. S.D.O. 2,600 ft.

Montague County

British Am. O. P. Co.'s No. 1 J. A. Martin, Sec. 27, H.&T.C. Sur.; 6,000-ft. test. Drlg. 4,310 ft.

Seitz, Comegy & Seitz' No. 1 King, 1,903 ft. W, 330 ft. N lines of SE¼ E. B. Wooten Sur., Abst. 480. Drlg. 3,363 ft.

W. H. Gant and Continental's No. 1 J. L. Brown, Sec. 58, E.T.R.R. Sur. 6⅝-in. 6,843 ft.; brkn. sdy. L. S.O. 6,843 ft.; treat. 3,000 gal. acd.; test showed O.& G. 7,036-56 ft.; T.D. 7,333 ft.; rng. 5½-in. lnr. 6,843-7,333 ft.; fsg. swb. and 5,800-ft. line; set retainer 6,500 ft.; perf. 52 shots 6,000-6,400 ft.; shot 10 qt. 6,470-80 ft.; no results; shot 20 qt. 6,300-10 ft.; 1,000 ft. mud, no oil; set plug 6,080 ft.; tstg.; re-treated 6,000 gal. acid; well kicked off and flowed in derrick from lime at 6,070-6,145 ft.; fills up 1,300 ft. fluid; S.D. for repairs.

Harvey Drlg. Co. et al's No. 1 D. A. Threadgill, Sec. 10, Jack Co. Sch. Ld. Sur. A-390; 6,000-ft. test. Drlg. 2,224 ft.

W. H. Peckham's No. 1 Dr. Lawson, N. Kimbro Sur., Abst. 405. Loc.

Ramsey Pet. Corp.'s No. 1 J. K. Loring, J. Lenow Sur., Abst. 20. Drlg. 6,767 ft.

Ramsey Pet. Corp.'s No. 1 W. H. Magee, A. C. Davis Sur., just outside of town of Montague. Drlg. 6,031 ft.

Sinclair Prairie Oil Co.'s No. 1 David Doty, J. H. Jones Sur., Abst. 396; (W offset to discovery). T. Ellenburger 5,820 ft.; drlg. 5,949 ft.

Sinclair Prairie Oil Co.'s No. 2 A. P. Howard, W. Wallace Sur, Abst 841. Drlg. 5,768 ft.

Sinclair Prairie's No. 1 T. H. Milam, Lot 54, A. Beason A-20 Sur.; 6,000 ft. test. Material.

Sinclair Prairie Oil Co.'s No. 1 Threadgill, W½ Blk. 10, Jack C.S.L.; (6 mi. S of Omohundro's Seay discovery). Drlg. 2,415 ft.

Sinclair Prairie Oil Co.'s No. 1 G. Whaley, SW cor. of N½ of T. R. Jackson Sur., Abst 394; (6,000-ft. test). Loc.

F. K. Willliford's No. 1 W. M. Goldsmith, C of Blk. 13, Wallace Sur., in Bonita townsite. Loc.

Youngblood & Foree's No. 1 M. N. Beasley, 900 ft. NL, 220 ft. EL of Benj. McGaha Sur.; 7 mi. N of Nocona; (3,-600-ft. test). Loc.

Throckmorton County

Normandie Oil Corp.'s No. 1 Travis, Sec. 37, Travis Co. Sch. Ld. Fishing 3,127 ft.

Wichita County

S. H. Fagadau's No. 1 A. D. Potts, NE cor. Sec. 4, Blk. 7, H.&T.C. Sur. Basal 3,989-4,035 ft.; tstg.

Wilbarger County

Amerada Pet. Corp.'s No. 1 B. Goodpasture, Sec. 35, H.&T.C. Sur., Blk. 18, 8,000-ft. test. Sat. lime 4,407-20 ft.; 600 ft. oil and 150 ft. mud on 60-min. D.S.T.; drlg. 5,312 ft.

O. M. Stidham & Son's No. 1 C. D. Watts, Sec. 64, H.&T.C. Sur., Blk. 15.; 6,000-ft. test. Spud.

Young County

Commodore Oil Co.'s No. 1 Clinton Realty Co., Sec. 2384, T.E.&L. Sur. Loc.

H. W. Dyer's No. 1 M. G. Cheney, M. L. Terry Sur., Abst. 1261. S.D. 2,130 ft.; reprs.

K. R. March's No. 1 Ed Burton, NE cor. Blk. 99, J. A. True Sur., Abst. 1640, 4 mi. SE Graham; 4,250-ft. test. S.D.; 6⅝-in. 3,804 ft.

A. T. Strong No. 1 Craig heirs, N. Lynch Sur. Drlg. 1,011 ft.

Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ont., May 4.—Crude and naphtha production from all Alberta fields in March totaled 556,410 bbl. compared with 639,952 bbl. in February. Comparative figures are as follows:

Field and grade—	Barrels—Feb.	Barrels—Mar.
Turner Valley:		
Limestone crude	602,364	520,357
Limestone gas wells	8,552	8,593
Absorption plants	25,707	24,166
Shallow crude	663	653
Red Coulee, light	976	1,000
Wainwright, heavy	675	686
Dina-Ribstone, heavy	225	.....
Terminal-Del Bonita, light	790	445
Lloydminster, heavy	.....	510

The decline in production was due almost entirely to reduction of the Turner Valley crude allowable up to the concluding 4 days of the month.

Among Turner Valley crude wells, Home Oil Co.'s No. 3, North Turner Valley, led the field with 15,387 bbl. for its first complete month's production. Anglo-Canadian Oil Co.'s No. 7, in South Turner Valley, yielded 12,431 bbl. Other major producers were: Home's No. 2, with 11,601 bbl.; Royalite's No. 46, with 11,536 bbl.; South West Petroleum's No. 3, with 11,182 bbl., and Home's No. 4, with 10,627 bbl. Arrow Royalties' No. 1, newly completed, was in partial production, with 692 bbl.

While March showed a decline, Turner Valley production for the 3 months of 1940 was 1,667,412 bbl. against 1,222,544 bbl. in the same period last year.

Turner Valley Completions

In West Central Turner Valley Arrow Royalties' No. 1, LSD 16, Section 13-19-3w5, finished in the Madison at 8,102 ft., set packer and acidized lower lime. Later the packer broke, and the well was killed and new packer run. Further acid treatment is being given in the lower zone which produced at the rate of 336 bbl. a day after the first treatment. The upper zone yielded 1,080 bbl. on a 24-hour test. The well is now testing for official allowable, and looks like a major producer.

In Section 6-19-2w5 East Crest Oil Co.'s No. 5, LSD 9, finished at 7,762 ft., produced at the rate of 800 bbl. a day from the upper zone after acidizing. It has been given final acid treatment and is testing for government allowable.

In Section 18-19-2w5 Calmont-Northwest's No. 1, LSD 3, finished in the black lime at 7,609 ft., some 437 ft. in the Madison. The upper porous zone was around 100 ft. Initial acid treatments of 500 gal. have been given in each zone and production is being tested, with indications of a good well.

Tests in the Lime

In Section 18-19-2w5 West Central field, Davies Petroleums' No. 5, LSD 10, is below 7,155 ft. after getting the Madison at 6,942 ft. The upper zone showed nearly 100 ft. of porosity.

In Section 7-19-2w5 Royalite Oil Co.'s No. 48, LSD 10, is below 7,366 ft. after getting the Madison at 7,087 ft.

In Section 8-18-2w5, Southwest Turner Valley, Northwest-Hudson's Bay Co.'s No. 3, LSD 15, is below 7,838 ft., after getting the lime at 7,685 ft.

In Section 17-18-2w5 Royalite's No. 50, LSD 7, got the Madison at 7,339 ft. and is preparing to resume after cementing casing at 7,353 ft. In Section 20-18-2w5 York Oils' No. 3, LSD 3, got the lime around 7,568 ft. and cemented casing at 7,583 ft. In Section 32-18-2w5 Royal Canadian Oil Co.'s No. 4, LSD 12, is standing cemented at 7,664 ft. after getting the Madison at 7,645 ft.

In North Turner Valley Anglo-Phillips' No. 1, LSD 14, Section 15-20-3w5, is below 8,660 ft. after getting the Madison lime at 8,580 ft.

Southwest Field

In Section 8-18-2w5, Southwest Turner Valley, Northwest-Hudson's Bay Co.'s No. 4, LSD 14, is working on derrick.

In Section 29-18-2w5 Commoll's No. 3, LSD 13, is in the lower Benton formation below 6,263 ft.

In Section 32-18-2w5 Pacific Petroleums' No. 4, LSD 3, is in the lower Benton below 5,500 ft. The test first got the cardium marker at 4,325 ft. with repetitions at 4,954 and 5,120 ft.

West Central Field

In Section 6-19-2w5 Kamalta Oils' No. 1, LSD 1, got the Dalhousie sand at 7,340 ft. and is in Fernie shale below 7,680 ft. and getting close to the Madison.

In Section 8-19-2w5 Southwest Petroleum Co.'s No. 4, LSD 4, is working on cellar.

In Section 13-19-3w5 Arrow Royalties' No. 2, LSD 15, is working on cellar.

North Turner Valley

In Section 27-20-3w5, North Turner Valley, Foothills Oil & Gas Co.'s No. 6, LSD 5, is below 6,827 ft. after drilling through the Home sand.

In Section 28-20-3w5 Home Oil Co.'s No. 5, LSD 16, is working on cellar. Home's No. 1, LSD 8, Section 33-20-3w5, is working on derrick.

Field Potential Higher

With 101 crude producers the potential of the Turner Valley field is now estimated in excess of 88,500 bbl. a day, with prorated production slightly over 20,000 bbl. This does not include four wells testing production. There are seven other wells now drilling in the lime, indicating the probability of 11 additional producers before the end of May.

Tests in the Foothills

On the Brazeau structure in the northern foothills west of Edmonton Home Oil Co.'s No. 1, LSD 16, Section 7-43-17w5, is in the Blairmore formation below 8,025 ft.

On the Moose dome Canadian Royalties' No. 1, LSD 7, Section 22-29-6w5, is practically rigged and will spud some time this month.

On the Mill Creek structure in the southern foothills Alliance Royalties' No. 2, LSD 14, Section 11-6-2w5, is below 320 ft.

Steveville Field

In the Steveville field, east of Calgary, Standard of British Columbia's No. 1 Princess, LSD 13, Section 22-20-12w4, has recovered stuck drill pipe and is deepening below 5,800 ft., more than 1,830 ft. in the Devonian limestone. Contract called for 6,000 ft., and production test will likely be made at that depth before further drilling is considered. A separator will be installed to test naphtha recovery from the large flow encountered at 5,254 ft. Standard's No. 2 Tide Lake, NW Section 20-18-9w4, 16 miles south of No. 1, will start work as soon as heavy equipment can be hauled.

Border Fields

In the Taber field, southern Alberta, North Taber Royalties' No. 1, LSD 7, Section 10-11-15w4, bottoming at 3,174 ft., has cemented casing in the top of the Madison limestone and is preparing to deepen into the lime. Several good gas shows with traces of crude were encountered above the lime, and at the contact a larger flow with bottom-hole pressure estimated at 1,600 to 2,000 lb.

In the Lethbridge area Trans-Alberta Oils' No. 1, formerly Lethbridge Petroleum & Refining Co.'s No. 1, LSD 12, Section 11-8-22w4, is resuming from 2,874 ft.

Illinois Fields

(Continued from Page 108)

NW NE NE Section 4-1n-13w, McClosky pay at 2,694-2,702 ft., acidized with 2,000 gal., pumped 237 bbl. in 20 hours. Wold Brothers' No. 1 J. F. Seibert, SE NW NE Section 4-1n-13w, McClosky pay at 2,712-49 ft., at intervals, pumped 175 bbl. of oil and 20 bbl. of water. Tide Water Associated Oil Co.'s No. 4 Spencer, NW SW SW Section 17-2s-13w, was a 200-bbl. well from Cypress sand at 2,466-77 ft., after a 20-qt. shot. Lindas' No. 1 Rose, SW cor. NW SW Section 14-2s-13w, was dry and abandoned in McClosky lime at 2,712-14 ft., total depth 2,805 ft.

In Edwards County Jarvis Brothers and others' No. 1-A Wick, NE SE NE Section 24-2s-10e, McClosky lime at 3,125-35 ft., flowed 240 bbl. naturally in 24 hours through ½-in. choke.

White County

In White County New Penn Development Co.'s No. 1 Williams, SW cor. SE SE NW Section 28-3s-9e, McClosky lime at 3,400-07 ft., pumped 55 bbl. of oil and 15 bbl. of water. C. D. Neff and others' No. 1 Buss heirs, NE cor. Section 28-5s-8e, St. Louis lime at 3,433-82 ft., total depth. It was dry and abandoned.

In the Irons pool Carter Oil Co.'s No. 4 O. Poole, SW SW SE Section 24-6s-8e, was shot with 80 qt. in Hardinsburg sand at 2,534-66 ft., and swabbed 278 bbl. Carter's No. 3 O. Poole, NW NE NE Section 25-6s-8e, shot with 60 qt. at 2,504-28 ft. and with 200 ft. at 2,510-32 ft., Hardinsburg sand, pumped 270 bbl.

In Washington County Magnolia Petroleum Co.'s No. 2 Liszewsky, NE NE SW Section 15-3s-3w, Cordes pool, Benoist sand at 1,278-89 ft., shot with 6 qt., pumped 21 bbl. Magnolia Petroleum Co.'s No. 1 Bonczyk, SE SE SE Section 32-3s-2w, dry and abandoned in McClosky lime at 1,596 ft., total depth 1,652 ft.

In Jefferson County Magnolia Petroleum Co. abandoned No. 1 Lettie Jones, NE NE NE Section 10-3s-2e, in Devonian lime at 4,333 ft., topped at 4,333 ft., total depth 4,578 ft. It was dry all the way down.

In Hamilton County Kingwood Oil Co.'s No. 1 Dodd, SE SE NW Section 6-6s-7e, was shot with 40 qt. in Cypress sand at 2,688-2,708 ft. It pumped 420 bbl.

Richland County

In Richland County Cosmopolitan Oil Co.'s No. 2 Wattleworth, SW NW SE Section 26-4n-10e, Fredonia lime at 3,102 ft., pay at 3,104-14 ft., acidized with 5,000 and 1,000 gal., pumped 92 bbl. of oil and 28 bbl. of water.

In Richland County Jarvis Brothers and others' No. 1 Hazel, NE NE NW Section 22-2n-9e, was dry and abandoned at 3,302 ft. Fredonia lime was topped at 3,173 ft.

Clay County

In Clay County De Kalb Syndicate's No. 1 Hanna, an old well plugged back from 2,953 to 2,790 ft., and casing perforated at 2,425-98 ft., pumped 40 bbl. of oil and 90 bbl. of water. Pure Oil Co.'s No. 5 G. Hubble, C W½ NE NW Section 9-1n-8e, McClosky lime at 3,029-93 ft., at intervals, acidized with 5,000 gal., flowed 405 bbl. Pure's No. 5 McCracken A, SE cor. NW NW Section 4-1n-8e, McClosky pay at 3,026-88 ft., at intervals, acidized with 5,000 gal., pumped 47 bbl.

Pure Oil Co.'s No. 2 K. Thomas, C N½ SE SE Section 13-2n-7e, Fredonia lime at 2,986 ft., pay at 2,990-3,048 ft., acidized with 5,000 gal., pumped 84 bbl. Pure's No. 1 M. B. Medley A, C E½ NW NE Section 24-2n-7e, Fredonia topped at 3,005 ft., pays at intervals from 3,028 to 3,102 ft., acidized with 5,000 gal., pumped 228 bbl. of oil and 94 bbl. of water.

In Schuyler County Brainerd & Gerson's No. 1 A. Foster, NW cor. SE SE Section 21-3n-4w of fourth principal meridian, had St. Peter sand at 984-90 ft. It was dry and the hole was plugged and abandoned. Harry Miller's No. 1 Feldheimer, SW cor. SE NW NW Section 12-3n-3w of fourth principal meridian, had dry Niagara lime at 656-79 ft., total depth and was abandoned.

In Hancock County Emery & King's No. 1 Hart, SE NE NE Section 23-7n-5w of fourth principal meridian, dry and abandoned at 700 ft.; had a small showing of oil at 622 ft.

In the St. James pool in Fayette County Texas Co.'s No. 8 Griffith, NE NW SE Section 25-6n-2e, topped Cypress stray sand at 1,585 ft. and Cypress sand at 1,597 ft., total depth 1,610 ft., pumped 180 bbl. without a shot.

New Wildcat Operations

In Shelby County Paul Doran made a location for No. 1 Compton, NE NW NE Section 22-10n-4e.

In Fayette County an unnamed operator has spudder on location for No. 1 Bieber, NW SW NE Section 19-8n-3e.

In Crawford County Carl Robinson was moving in material for No. 1 O. Walters, SE NW SE Section 19-7n-12w, a Devonian lime test.

In Clay County A. R. Madden's No. 1 Sloan, near C NE SE SW Section 6-4n-5e, a location.

In Edwards County Noah & Morrison's No. 1 Wick, C N½ NE SW Section 24-2s-10, a location.

In White County Sun Oil Co.'s No. 1 Brown, C S½ SE NW Section 2-4s-9e, drilling at 1,116 ft.

Mississippi Is Still Active Despite Abandonments

By GEORGE WEBER

JACKSON, Miss., May 6.—Despite further abandonments of Mississippi wildcats, leasing and geophysical activity remains active throughout the state. During the week several drilling wildcats gained in interest, while new areas drew attention with wildcat locations proposed and staked. Tinsley was extended eastward by completion of a good well, and interest, heretofore centered on the north and northwest sector, which is showing good Woodruff sand sections, is directed to the southeast area, where an edge well is getting under way to drill beyond a fault.

Wildcat Activity

New tests were staked in Holmes, Scott and Yalobusha counties, with tests rumored for other areas. In Holmes County L. A. Hawkins is moving derrick on No. 1 Humphrey, Section 33-13-2. Scott County's new wildcat location, No. 1 Newell, was staked by Exchange Oil Co. who is moving a rig for early spudding. The wildcat is in Section 30-7n-7e. In Yalobusha County J. E. Green has made location in Section 23-25-6e, but starting date has not been announced. A 9,300-acre block in Madison County was taken over last week by Stanolind Oil & Gas Co. which plans a 5,000-ft. test shortly in or near Section 10-11n-5e.

S. J. Wheeless' No. 1 Columbia Mutual Life Insurance Co., in Section 19-1n-3w, Copiah County, was abandoned last week at 8,005 ft., the deepest current test in the state. Sand sections were encountered in the upper sections but held no oil shows. The same was true of Hawkins & Mathews' No. 1 Ellis, Holmes County, abandoned at 5,007 ft., having had sands in the Eutaw, one showing faint oil stain and gas blow between 3,913-23 ft. The presence of sands in the Eutaw and other formations showing them fairly extensive in Central Mississippi has held up interest since they enhance the possibilities of finding production, provided they are encountered high enough structurally, as in the case of the Pickens field discovery.

Tinsley Field

A good producer from 19 ft. of Woodruff sand brought Tinsley's producers to a total of 43 wells during the week. The well, E. C. Johnston's No. 2-B Brumfield gaged 100 bbl. the first hour through a 1-in. choke. Other wells were on the sand at the end of the week including a prospective eastern extension, with further completions due shortly. One test, to the west of production, Union Producing Co.'s No. 1 T. Ross, was abandoned after missing the Woodruff sand and finding salt water in the Stevens sand of the Eutaw formation.

In a southeast edge location, Whigate Oil Co. is beginning No. 2 Robertson which will be closely watched since it is located across a fault cut by the operator's No. 1 Robertson some weeks ago. The downthrow side of the main fault in the north section has shown much better Woodruff sand thickness than the side towards discovery, so the possibility the same condition may hold in the southeast makes No. 2 Robertson an interesting test.

MISSISSIPPI COMPLETIONS

Wildcat—Copiah County

S. J. Wheeless' No. 1 Columbia Mutual Life Insurance Co., C NE NE Section 19-1n-3w, dry and abandoned, total depth 8,005 ft.

Wildcat—Holmes County

Hawkins & Mathews' No. 1 Ellis, C NE SW Section 18-14n-4e, dry and abandoned, total depth 5,007 ft.

Tinsley—Yazoo County

E. C. Johnston's No. 2-B Brumfield, C NE SE Section 2-10-3, 100 bbl. per hour, 1-in. choke, Woodruff sand 4,792-4,811 ft., total depth 4,827 ft. Union Producing Co.'s No. 1 T. Ross, C NW NW Section 14-10-3, total depth 5,160 ft., no Woodruff sand, Stevens sand 4,975-87 ft., salt water, dry and abandoned.

MISSISSIPPI

Attala County

F. R. Jackson's No. 1 Federal Land Bank, 410 ft. S, 620 ft. E NW cor. NW SE Sec. 29-16n-9e. Drlg. sd. 3,263 ft.
Kosciusko Oil Co.'s No. 1 Jones, 600 ft. NW cor. Sec. 5-15n-9e. Loc.
P. & M. Oil Co.'s No. 1 J. A. McMillin, 300 ft. SW cor. SE SE Sec. 26-13n-5e. Spd. to 25 ft.; S.D.W.O.

Choctaw County

Garland Anthony et al's No. 1 Ballard, SE cor. Sec. 8-18n-1e. T.D. 22 ft.; S.D.

Clarke County

Ark.-Miss. Oil Co.'s No. 1 Long Bell, C SW NE Sec. 35-3n-17e. M.I. rig.
Ark.-Miss. Oil Co.'s No. 1 State, C SE SE Sec. 16-2n-16e. T. Selma chalk 2,595 ft.; Drlg. sh. 4,717 ft.

Copiah County

G. C. Koch's (former Triangle Drilling Co.) No. 1 W. W. Broome, 153 ft. SW cor. SW SE Sec. 1-10n-8e. Drlg. sh. 3,992 ft.

Hinds County

Royal Oil & Gas Co. et al's No. 1 Hinds County Land, NE SW NE Sec. 33-5n-2w. Drlg. sh. 4,823 ft.

Holmes County

Exchange Oil Co.'s No. 1 S. D. Gwin, 2,170 ft. S line, 1,470 ft. E line, Sec. 6-16n-1e. Loc.
Exchange Oil Co.'s No. 1 B. Russell, NE cor. NE SE Sec. 32-15n-2e. Set 10¾-in. csg. 665 ft.; drlg. chalk 3,963 ft.
L. A. Hawkins' No. 1 B. W. Humphrey, 1,980 ft. S, 330 ft. W NE cor. Sec. 33-13n-2e. Drk.
Rowan Drlg. Co.'s No. 1 Smith, C NW NE Sec. 7-14n-1w. Set 10¾-in. csg. 593 ft.; drlg. plug.
A. C. Varner's No. 1 P. S. Jones, Sec. 27-15n-1e. M.I.M.

Humphreys County

R. Clarke's No. 1 Allen, 800 ft. N, 400 ft. E, SW cor. Sec. 4-13n-4w. Drlg. sd. 4,290 ft.
J. B. Moncrief et al's No. 1 State, 2,490 ft. E line, 150 ft. N line of Sec. 9-15n-2w. Drlg. sh. 3,910 ft.

Issaquena County

Locke & Mellard's No. 1 W. Gary, 660 ft. SE cor. NW¼ Sec. 14-9n-6w. Loc.
W. G. Ray Drlg. Co.'s No. 1 Irby Charping, approx. C NE NW Sec. 29-10n-8w. Set 13⅜-in. csg. 145 ft.; drlg. 4,865 ft.

Itawamba County

G. C. Grasty et al's No. 1 Ky. Lbr. Co. 1,320 ft. E, 660 ft. S, C Sec. 7-10s-10e. Twisted off D.S.; skd. 24 ft. S and spd.; set 10¾-in. csg. 170 ft.; S.O. 1,500 ft.; T. Trenton L. 1,600 ft.; tstd. sulf wtr. 2,793-97 ft.; ran csg. to 2,795 ft. and shut off sulfur wtr.; bailed S.O. and some gas; drlg. ahead 2,800 ft.

Kemper County

M. R. Crabb et al's No. 1 W. T. Caldwell, NW SE Sec. 25-9n-15w. 10¾-in. csg 86 ft.; set 6-in. csg. 1,320 ft.; T.D. 1,640 ft.; acid. with 1,000 gal.; S.D.; W.O.

Lamar County

Miss.-La. Oil Synd.'s No. 1 Simmons 1,020 ft. N, 56 ft. W, SE cor. NE¼ Sec. 32-3n-14w. S.D. 920 ft. (cor. T.D.)

Madison County

W. G. Ray Drlg. Co.'s (formerly E. L. Foster's) No. 1 Haffey, NE cor. S½ Lot 5, Sec. 8-10n-5e. Drk.
Ralph Johnston's No. 1 Minerva Young et al, C SE NE Sec. 32-11n-4e. Set 10¾-in. csg. 584 ft.; drlg. sh. 2,457 ft.
Owen & Fraim's No. 1 Talmadge, SW NE Sec. 22-11n-3e. Loc.

Monroe County

Willmut G. & O. Co.'s No. 1 Roberts NW¼ Sec. 18-13s-17w. D.S.T. 2,410-30 ft.; Amory gas zone, dry; S.G. 2,844-52 ft.; hard cmtd. sd., odor oil 2,821-72 ft.; D.S.T., no results; ran Schlumberger and set 7-in. csg. 2,810 ft.; T.D 2,879 ft.; flwd. small amt. gas and bailed to bttm.; shot with 140 qts. nitroglycerin; made slight amount gas; C.P. built up to 700 lb.

Oktibbeha County

Oktibbeha Oil & Gas Co.'s (Nick Shiarella) No. 1 L. L. Murphy, NE NE NW Sec. 28-17n-12e. Set surf. csg.; W.O.C.

Pike County

S. R. Crouch's No. 1 Cupit, 360 ft. N, 660 ft. W, SE cor. NE SW Sec. 25-2n-7e. Set 6-in. csg. 729 ft.; S.D. 3,390 ft.

Prentiss County

Home Dev. Co.'s No. 1 Mrs. A. Allen Sec. 8-7s-9e. S.D. 1,760 ft.; reported S.O. 1,520 and 1,750 ft.

Scott County

Exchange Oil Co.'s No. 1 Newell, Mineral Lease Co., Inc., 330 ft. NW cor. NE SW Sec. 30-7n-7e. M.I. rig.
E. L. Martin's No. 1 Adams Edgar Lbr. Co., C S½ SE SW Sec. 25-8n-6e. M.I.M.

Sharkey County

Eureka Pet. Co.'s No. 1 W. H. Cooper, 1,980 ft. S, 660 ft. W, NE cor. Sec. 13-14n-6w. Set 10¾-in. csg. 571 ft.; T.D. 3,641 ft. chlk.; reamed down and running electrical log.

Smith County

Haynes B. Owenby Drlg. Co.'s No. 1 State, C SE NE Sec. 6-2n-9e. M.I.M.

Stone County

H. I. Morgan's No. 1 Dantzler Lbr. Co., NW SE Sec. 8-4s-12w. Drlg. sd.&sh. 7,572 ft.

Warren County

H. C. Cummings et al's No. 1 T. H. Morrissey, C E½ W½ NE Sec. 8-17n-2e T.D. 5,774 ft.; hole bridged 1,250 ft.; sdtrkd. and drld. back in old hole 3,000 ft.; S.D.W.O.

Wayne County

Hill & Hill and W. L. Stewart's No. 1 Kalmia Realty Co., C SW NW Sec. 8-7n-9w. Set 16-in. csg. 30 ft., spd. mch. sd. 1,270-75 ft.; S. dead oil and slight S.G.; drlg. 3,857 ft.

Yalobusha County

Robert Brian's No. 1 Walker, Sec. 15-11n-5e. Bldg. drk.

Yazoo County

Exchange Oil Co.'s No. 1 L. B. Dixon, C SW SW SW Sec. 29-12n-3e. Spdg.
Exchange Oil Co.'s No. 2 M. P. Wilburn et al, 330 ft. W, 990 ft. S, NE cor. Sec. 31-12n-3e. Spdd.
Hassie Hunt's No. 3 A. G. Johnson, C NW NE Sec. 14-10-3. Missed Woodruff sd.; T. Eutaw 4,485 ft.; missed Stevens sd.; T.D. 5,590 ft.; swbg.
E. C. Johnston's No. 3-B Brumfield, 423 ft. W, 660 ft. N SE cor. SW NE Sec. 2-10-3. Set 10¾-in. csg. 609 ft.; W.O.C. 643 ft.
J. R. Lockhart et al's No. 1 Frank Brooks, W½ SE NW Sec. 17-10-2w. T. chalk 4,964 ft.; T. sd. 5,047 ft.; cd. 5,051-56 ft.; cores rec. 5,047-51 and 5,110-25 ft.; showed salty taste; T.D. 5,236 ft.; rollerbit cones in hole; lubricating.
Sells Pet. Co.'s No. 1 Falkner, C SE NE Sec. 34-9n-4w. M.I.M.
Slick-Urschel Oil Co.'s No. 4 T. B. Slick, 440 ft. W, 660 ft. N, SE cor. NE Sec. 2-10-3. Set 10¾-in. csg. 634 ft.; Woodruff sd. 4,797-4,814 ft.; set csg.; washing in.
Slick-Urschel Oil Co.'s No. 5 T. B. Slick, 660 ft. W, 100 ft. S, NE cor. Sec. 2-10n-3w. Drlg. sdy. sh. and lig. 3,601 ft.
Union Prod. Co.'s No. 1 Cesana, C NW SW Sec. 18-10-2. Set 7-in. csg. 4,829 ft.; T.D. 4,833 ft.; Woodruff sd. 4,701-66 ft.
Union Prod. Co.'s No. 1 Ada Partridge, C SW SE Sec. 1-10-3. T.D. 4,918 ft.; set csg., perf. 4,862-73 ft. and 4,875-83 ft.; flwg. in pits.
Union Prod. Co.'s No. 1 J. E. Twiner, SW NW Sec. 1-10-3. Sd. 4,842-52 ft.; set csg.; W.O.C.
Union Prod. Co.'s No. 2 Twiner, C NW SE Sec. 1-10-3. Drlg. 127 ft.
Union Prod. Co.'s No. 1-B Woodruff, C SW NW Sec. 18-10-2. Drlg. 172 ft.
Union Prod. Co.'s No. 5 Woodruff, C SW SW Sec. 13-10-3. Sd. 4,560-70 ft. set csg.; completing.
Whigate Oil Co.'s No. 2 Robertson, S½ NW SE Sec. 20-10-3. M.I. rig.

GEORGIA

Clinch County

Georgia Resources, Inc.'s No. 1 Gillican, C Land Lot 200, 12th Land Dist. Set 10-in. csg. 736 ft.; sdtrkd. hole and drlg. 879 ft.
Georgia Resources, Inc.'s No. 1 Dickerson, Land Lot 273, Land Dist. 12 Drlg. 330 ft.

Monigomery County

E. O. Moses' No. 3 Montgomery, SW R.R. station, Uvalda Sur. Drlg. sh. 750 ft.; no report.

ALABAMA

Choctaw County

Union Prod. Co.'s (formerly Joe Modisett et al) No. 1 McCorvey, SE cor. SW SW Sec. 20-9n-2w. O.W.D.D.; O.T.D. 7,520 ft.; reamed to bttm.; recmtd.; T. surf. csg.; drlg. 9,113 ft.

Green County

L. M. Glasco's (formerly E. C. Johnson's) No. 1 Willis, SW Sec. 11-20n-1e. Set 10 ft. surf. csg.; S.D. 45 ft.

Marion County

Seaboard Oil Co.'s No. 1 Clark et al., 360 ft. W, 660 ft. N, SE cor. SE SW Sec. 28-11s-14w. T.D. 25 ft.; S.D.

Mobile County

W. L. McClanahan's No. 1 J. A. Stafford, 300 ft. N, 150 ft. W SE cor. NW SW Sec. 24-7s-3w. Set 10-in. csg. 750 ft.; W.O.C.

FLORIDA

Dade County

Wm. G. Blanchard et al's No. 1 Everglades, 200 ft. E, 100 ft. N, SE cor. Sec. 31-53s-35e. Set 16-in. csg. 140 ft. drlg. L.&sh. 1,328 ft. (no report).

CRUDE-OIL PRICES IN REPRESENTATIVE FIELDS

Complete crude-price schedules are now being published in the first issue of each month. The last complete schedule was published in the May 2 issue. All changes in crude-oil-price schedules will be published completely in the first issues following the announcement of the changes. Following are representative crude-price schedules in barrels (42 gal.):

East Texas	$1.10
Conroe	1.27
Tepetate, Louisiana	1.03
Smackover, Arkansas, heavy	.73
Illinois basin	1.05
Pecos County, Texas	.78
Lance Creek, Wyoming	.77
Bradford, Pennsylvania	2.76

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

	Signal Hill, California*	Oklahoma, Kansas	Gulf Coast Texas
14-14.9	$.065	....	....
15-15.9	.65	....	....
16-16.9	.65	....	....
17-17.9	.65	....	....
18-18.9	.65	....	....
19-19.9	.69	....	$0.86
20-20.9	.73	$0.70	.88
21-21.9	.78	.72	.90
22-22.9	.82	.74	.92
23-23.9	.86	.76	.94
24-24.9	.90	.78	.96
25-25.9	.95	.80	.98
26-26.9	.99	.82	1.00
27-27.9	1.03	.84	1.02
28-28.9	1.07	.86	1.04
29-29.9	1.10	.88	1.06
30-30.9	1.14	.90	1.08
31-31.9	....	.92	1.10
32-32.9	....	.94	1.12
33-33.9	....	.96	1.14
34-34.9	....	.98	1.16
35-35.9	....	1.00	1.18
36-36.9	....	1.02	1.20
37-37.9	....	1.04	1.22
38-38.9	....	1.06	1.24
39-39.9	....	1.08	1.26
40-40.9	....	1.10	1.28

*Effective February 1, 1940.

Crude-Oil Prices

Commonwealth Pipe Line Co. increased its price paid for crude in Allegan, Ottawa, and Kent counties 5 cents per barrel, effective April 27, making the new price $1.08 per barrel. This price was met by Imperial Pipe Line Co. and Sohio Oil Co., the latter company also posting a 5-cent increase in the Bloomingdale field in Van Buren County, making the new price $1.08.

Personal Paragraphs

BASIL HOPPER, research division of Union Oil Co., has been appointed manager of research; T. F. OTT has been appointed general research supervisor; A. L. BLOUNT, W. E. BRADLEY, D. E. CARR, P. S. CLARKE, P. H. JONES, and C. C. MOORE have been appointed research supervisors.

J. C. CHATFIELD, for 18 years a writer for National Petroleum News, has resigned to become a member of the staff of Indian Territory Illuminating Oil Co. In this new position he will keep the company management in touch with economic trends in the oil industry through statistical studies. He will also function in the raw-products sales division.

J. H. BOVAIRD and Mrs. Bovaird of Bradford, Pa., are visiting relatives and friends in Tulsa.

M. L. RANDALL, president of the Randon Oil Co., Houston, Tex., is making a tour of oil developments in North Texas.

PAUL ADAMS, head of the Mene Grande Oil Co.'s land department, returned to Venezuela last week after spending several weeks in New York and other cities.

F. J. NICHOLSON, land man for Shell Oil Co., Inc., at Lake Charles, La., has been transferred to the West Texas division with headquarters at Midland, Tex.

GEORGE VANDAVEER, JR., chief petroleum engineer in the Gulf Coast district for Phillips Petroleum Co., has resigned and accepted a similar position with the Mid-States Petroleum Co., at Tulsa.

F. W. ABRAMS, president of Standard Oil Co. of New Jersey, and E. HOLMAN, president of Creole Corp., have been nominated for directors of Standard Oil Co. (New Jersey), the board having been increased from 9 to 11 members.

PROFESSORS J. O. BALL and JOHN C. REED, of the Colorado School of Mines, and a group of 28 senior petroleum students will arrive in Tulsa Friday evening, May 17, on their annual tour of the oil fields and refineries. They plan to attend the exposition. This is the last stop of their 2,800-mile trip, which covers the fields of New Mexico, Texas, and Oklahoma.

JOE WOFFORD, with the export sales department of Sun Oil Co.'s London, England, office, has been visiting friends and relatives in Dallas, Tex., for the past week and expects to return to England in about 2 weeks. He was formerly in the Dallas office before being transferred to London.

DR. GUSTAV EGLOFF, director of research at Universal Oil Products Co., delivered two lectures at the University of North Dakota, Grand Forks, N. D., on May 3. In the morning he spoke on "Hydrocarbons and Their Social and Economic Significance," at the dedication of the new chemical engineering building for unit operations. In the evening he addressed the engineering faculty and students on "Researches in the Oil Industry."

J. R. PEMBERTON, California umpire, while host to a number of naturalists, fell off his schooner near San Benito Island, offshore from Magdalena Bay, Mexico, but was pulled aboard by prompt action.

WARREN L. TODD, president of Columbia Oil & Gas Co. and other oil and drilling companies, Dallas, Tex., last week joined O. C. GARVEY, independent operator of Houston, Tex., in organizing the United Central Oil & Gas Co.

R. G. SATTERLEY recently resigned as fuel-oil sales manager of Shell Oil Co., Inc., of Chicago, to become associated with Arrow Petroleum Co. as vice president in charge of its new marine-terminal operations. He has been associated with Shell for 10 years in several marketing departments in the Middle West and South.

PROF. VLADIMIR N. IPATIEFF, director of chemical research of Universal Oil Products Co. and professor of chemistry at Northwestern University, has been elected to receive the 1940 Willard Gibbs Medal, founded by William A. Converse. The medal, awarded annually by the Chicago section of the American Chemical Society for conspicuous contributions in chemistry, will be presented at a dinner meeting of the section at the Stevens Hotel May 24. The presentation will be made by Prof. S. C. Lind, society president.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

The peak of production in the Cushing field in Oklahoma was reached this month. It was variously estimated from 305,000 to 330,000 bbl. The field is believed to be definitely on the downgrade. The intrusion of water in the north end of the field and the loss of gas pressure are viewed with alarm.

The Texas Co.'s office building in Houston has been completed and 300 employes and officials are housed in it.

J. R. Penn is elected president of the Illinois Pipe Line Co. at the annual meeting of directors.

J. B. Crawford is elected president of the United Natural Gas Co. (Standard), succeeding W. W. Richardson, deceased.

20 YEARS AGO

Pres. Woodrow Wilson sends the name of Dr. Frederick G. Cottrell to the Senate as director of the U. S. Bureau of Mines to succeed Dr. Van H. Manning, resigned.

The Tedlock pool in Miami County, Kansas, produces from sand topped at about 132 ft. and containing as high as 28 ft. of thickness. The wells start at from 15 to 25 bbl. per day. It is in Township 18s-24e.

Standard Oil Co. of New York announces that the price of gasoline to garages is 30 cents per gallon. The price to the consumer is 32 to 34 cents. There is no tax.

J. S. Cosden's Paul Jones, a "long shot," wins the Kentucky Derby much to the disgust of bettors who overlooked the Paul Jones nag.

10 YEARS AGO

Tank-wagon price of gasoline in New York is 16.3 cents per gallon.

A recently discovered shallow gas field near Watkins, N. Y., is promised a lively drilling campaign this year. A late well started at 10,000,000 cu. ft. per day.

A. E. JORDAN, land man for Barnsdall Oil Co., at Corpus Christi, Tex., has been transferred to the company's offices at Houston.

C. L. SUHR, chairman of the board of the Pennzoil Co., will address the annual meeting of the Bradford District Oil Producers Association in Bradford, Pa., May 15.

JOHN DAXON, petroleum engineer, Phillips Petroleum Co., at Houston, Tex., has been transferred to Burbank, Okla. T. H. AWLEY of Wichita, Kans., has been transferred to Houston, replacing Mr. Daxon.

E. C. STEELE of Chatham, Ont., superintendent of Union Gas Co. of Canada, Ltd., was elected president of the Industrial Accidents Prevention Association at its annual convention at Toronto recently.

E. P. TALLANT has been made manager of the Rocky Mountain division of the Union Oil Co. of California, and has established headquarters at Belle Fourche, S. D. The company is preparing to drill a wildcat in northeastern Wyoming.

J. W. SOUTHWORTH, manager of the Shell Oil Co., Inc.'s southern California division, will be in charge of the newly combined Los Angeles and southern California division. E. R. RAPHAEL, who has been manager of the Los Angeles division, becomes manager of the Seattle division. Mr. Southworth's executive staff in Los Angeles will consist of F. W. HATCH, wholesale sales; E. J. GRIFFIN, retail sales; W. T. SHAW, operations manager, and H. J. BROWN, office manager.

L. S. KNISELY, president of the Midway Victory Oil Co., has opened offices at Corpus Christi, Tex.

IRVINE E. STEWART, consulting petroleum geologist of Los Angeles, is on an extended trip through the eastern, Mid-Continent, and Rocky Mountain fields.

J. P. EDWARDS, of New York, was added to the board of Tide Water Associated Oil Co. last week filling an unexpired term of the late Charles M. Cadman.

GILBERT A. TALLEY, with Exchange Oil Co. (Sinclair Prairie), has been transferred from Oklahoma City, Okla., to the company's new offices in Jackson, Miss.

A. L. ARMSTRONG, of Texas Co., Shreveport, La., has been placed in charge of the geologic drafting department which has recently been organized to supplement the geological department, independent of the engineering department of the company.

D. G. BAILEY, as manager, and WILLIAM AGNESS, director of a Gulf Research Development Co. geophysical party, are being stationed for several months in West Point, Miss., from which they will conduct surveys in Clay and neighboring counties.

GLEN HARROUN, president of the Interstate Minerals Corp., at Laredo, Tex., witnessed the completion of his company's discovery well in Webb County, Texas, last week. The field, which is classified as one of the best to be discovered in the Laredo district in several months, has been named "Glen" by the South Texas nomenclature committee.

Payday Not Everything

H. C. Farquhar, manager of purchases for the Union Oil Co. of California, Los Angeles, recently completed 30 years of continuous service in that organization. His first job was that of price clerk for the Union Well Supply Co., a purchasing subsidiary of Union Oil. It early became evident that the newcomer's interest was not concentrated on quitting time and paydays, with the result that modest promotions came with gratifying regularity, and before long young Farquhar found hmself holding the post of purchasing agent. Upon dissolution of the Union Well Supply Co. in 1913, when Union Oil organized its own purchasing department, Mr. Farquhar was appointed assistant purchasing agent. In 1922 he was advanced to purchasing agent. Two years later he became manager of purchases, which position he has filled since then.

H. C. FARQUHAR

For many years Mr. Farquhar has been active in the work of the Purhasing Agents Association of Los Angeles and the National Purchasing Agents Association. In the latter organization he has been a valuable member of the Buyers Committee. Besides his business interests Mr. Farquhar is something of a gentleman farmer, and he spends most of his spare time on his beautiful Newhall ranch, which is within easy driving distance of his office in Los Angeles. He is a bridge enthusiast, and his friends say he plays a good game.

JOE TRAVIS, field geologist for Barnsdall Oil Co., at Victoria, Tex., has been transferred to the company's district offices at Corpus Christi, Tex.

T. K. WYNN, former scout with Exchange Oil Co. in Mississippi, has resigned to operate independently. He is succeeded by C. F. KIMBALL, transferred from Baton Rouge, La.

L. R. HOLMES, of Texas Co. of California, recently completed 37 years service with the company, having served the earlier part of this period with the parent company.

D. B. HODGES, executive assistant in the executive department of Shell Oil Co., Inc., at the California headquarters of the company in San Francisco, has been transferred to the New York office.

GEORGE J. HANKS, vice president of Tide Water Associated Oil Co., was elected a director of the company at last week's annual meeting in New York to fill 2 years of the unexpired term of Noel Robinson.

C. P. CLAYTON, former division manager for the Texas Co. in the Gulf Coast division, and later well known among pipe-line and production circles, who for a number of years has been living in Hutchinson, Kans., has been visiting old oil acquaintances on the Gulf Coast.

R. A. BROWNE, Pennzoil Co., was elected secretary, and SAMUEL MESSER, Quaker State Oil Refining Corp.; C. L. SUHR, Pennzoil Co.; A. E. MACKINTOSH, Cairo Oil Co., and GEORGE WELKER, United Natural Gas Co., members of the executive committee of the Oil City, Pa., Chamber of Commerce.

J. L. (NICK) CARTER, geologist with Gulf Oil Corp., has been transferred from Amarillo, Tex., to the company's Midland, Tex., office. He resided in Midland several years ago before going to Amarillo for Gulf.

EARL C. PERRY, scout for Sinclair Prairie Oil Co. in northern West Texas and Southeast New Mexico, was transferred to Baton Rouge, La., last week end, where he will make his headquarters while scouting the Mississippi district. His duties in West Texas were taken over by SHERRILL WHITE, formerly scout with Continental Oil Co.

E. A. ALLEN, formerly production engineer for Lone Star Gasoline Co. in the Dallas, Tex., office, has been named assistant to L. T. POTTER, chief production engineer, and will also have charge of the company's scouting activities. RALPH D. GRAY, formerly chief scout for the company, recently resigned to enter the oil business as an independent. J. W. BURRAGE, formerly district production engineer in West Central Texas with offices in Ranger, has been promoted to field supervisor. He is succeeded by C. T. DEAN, who was production engineer for Lone Star at Ranger until he assumed his new post.

GORDON N. SCOTT, consulting pipe-line technologist of Los Angeles, Calif., was visiting in Tulsa and St. Louis, Mo., this week. At Dallas, Tex., last week he delivered an address on cathodic protection of pipe lines before the Petroleum Industry Electrical Association's annual meeting.

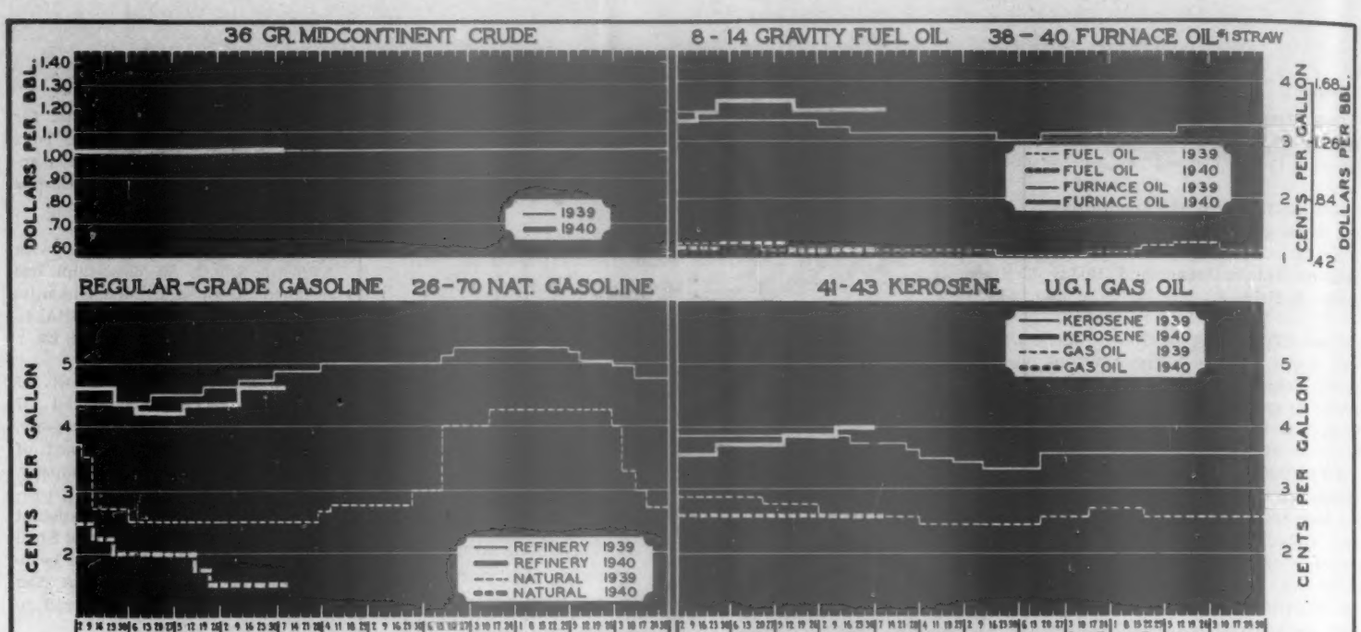
J. D. SANDEFER, JR., Breckenridge, Tex., has been appointed to the board of directors of the Texas Big Bend Park Association by AMON G. CARTER, president. Mr. Sandefer is a leader in the Texas oil industry, a member of the Texas State Parks Board, a director of the Mid-Continent Oil and Gas Association, Independent Petroleum Association of America, and of West Central Oil and Gas Association, of which he was first president.

JOSEPH GLASS, president of Midstates Oil Corp. of New York, was in West Texas last week with a group of company representatives inspecting the company's holdings in the recently discovered Noelke area of Crockett County. He was accompanied by N. T. GILBERT, general manager, Tulsa; W. C. WEAVER, district geologist, Corpus Christi, Tex.; J. C. FINLEY, chief geologist, Tulsa; and JOHN M. HOUSER, land man, Houston, Tex.

HARRY H. MACK, vice president in charge of production of the Sunray Oil Co., of Tulsa, and MISS KATHRYN MALCOLM, also of Tulsa, were married in the home of the bride's cousin, Dr. and Mrs. M. E. Phelps, of El Reno, Okla., April 20. After a short trip to Santa Fe, N. M., they will be at home in Tulsa.

SAM COOK, president of Cook Drilling Co. and director of Hubbell Production Co., Fort Worth, Tex., was in St. Louis, Mo., last week where he attended a ball game between the New York Giants and St. Louis Cardinals. CARL HUBBELL, president of the Hubbell company, pitched for the Giants.

SHIFTS: R. G. MORRISON, director, Shamrock Oil & Gas Corp., from Pinehurst, N. C., to Spring Lake, N. J.; M. A. FINNEY, superintendent, Pure Oil Co., from Van, Tex., to Madill, Okla.; T. E. WALL, geologist, American Seismograph Co., from Mount Carmel, Ill., to Allied Oil Production Co., Vandalia, Ill.; ROBERT M. TESAR, engineer, Carter Oil Co., from Okolona, Miss., to Meridian, Miss.; T. M. MORONEY, Oklahoma Pipe Line Co., from Tulsa to San Jose, Calif.; A. H. RICHARDS, geologist, Y.P.F., from Godoy Cruz, Mendoza, Argentina, South America, to Oklahoma City, Okla.



Representative Mid-Continent Quotations on Crude Oil and Refined Products. Basis Oklahoma (Group 3)

Gasoline Causes Worry in Group 3 Area and Lubricants Sag Again

By T. F. SMILEY

LUBRICATING oils were off again in the Group 3 market this week. Gasoline continued to be a source of worry. Kerosene and tractor fuels were strong. The heating oils were steady, notwithstanding the advent of warm weather. Little change was noticeable in other divisions.

The only refiners who were making money out of gasoline were those who bought it at bargain prices and resold it. There was no profit in making it and selling it at current quotations. Some reported moderate improvement in demand. Congestion of supplies at the Gulf presented a more serious problem than ever, though stocks in that area did record a small decline in the week ended April 27. Mid-Continent inventories dropped 427,000 bbl., a creditable showing in view of the fact that the nation's stocks fell only 365,000 bbl.

Major Buying in Prospect

For the first time in months there were evidences that buying by major companies might be resumed. This prospect, vague though it seemed to be, cheered the trade a little.

The break in gasoline prices on the Gulf Coast, although constituting no immediate threat to the Group 3 market, added something to the depressing influences that have produced the current weakness. It is recognized that the congestion at the Gulf might reach a point which would cause overtaxed storage to overflow into northern markets, and it was understood this week that some Gulf Coast refiners, desperate for outlets, were willing to accept even less than the new cut prices if they could be assured of immediate shipments. However, on account of freight differentials. Gulf prices would have to go considerably lower than they are now before gasoline from that area could move to northern markets in competition with the Group 3 product.

Another drop in neutrals and bright stocks, accompanied by continued declaration by refiners that this division of the market in the Mid-Continent was far from weak, renewed discussion of the peculiar situation into which the lubricants have been carried. Refiners said that, notwithstanding the fact there had been two cuts in prices only a week apart, inventories were about 10 per cent lower than they were a year ago and demand was definitely better. Persistent softness of lubricating oils in the East made the price reduction imperative.

Compounders and blenders entered the present year with huge stocks which they had built up in expectation of urgent oversea demand. This demand did not materialize, and the market weakened in consequence, much more emphatically in the East, however, than in the interior. Refiners reporting to the Western Petroleum Refiners Association produced 39.1 per cent more bright stock in the first quarter of 1940 than they did in 1939. That of course did not help the market any, in view of the falling export requirements. There was a strong feeling in the trade this week that the stocks which buyers laid in during the closing months of 1939 and the early weeks of 1940 are nearing depletion and that substantial buying should begin soon, especially since the season of heavy domestic demand for lubricants is near.

Naturals Still in the Dumps

No signs of better feeling were observable among natural-gasoline manufacturers, unless it lay in rather vague rumors that oversea and coastwise business would pick up before the middle of June. There was little fear that the present low prices would go any lower. Even the refiners, though usually welcoming bargains, do not care to see any further reduction in quotations because of the unfavorable psychological effect the cut would have on a motor-fuel market already full of trouble.

Heating oils displayed no signs of weakness, and there was a feeling that current prices might hold throughout the summer. Wax was easy. U.G.I. gas oil and heavy industrial fuel were unchanged.

Refined Oil Market Barometer

Except for a faintly steadier tone in California the gasoline market gave no sign of improvement. Some Gulf Coast refiners, with no storage space left, face a serious situation, and prices broke sharply. Lubricating oils sank, though in the Mid-Continent supply was not far out of balance with demand. Natural gasoline still weak. Kerosene and tractor fuels firm.

MID-CONTINENT. Gasoline causing nervousness. Lubricating oils off. Tractor fuels strong.

EAST COAST. Further softness in gasoline. Heating oils steady. Bunker fuel firmer.

GULF COAST. Gasoline weaker, situation increasingly serious. Bunker C fuel easier.

PENNSYLVANIA. Gasoline quiet. Fuel oil dull. Neutrals and bright stocks decline.

CALIFORNIA. Gasoline slightly stronger, but market narrow. Fuel and diesel oils unchanged.

CHICAGO. Gasoline fairly steady. Kerosene active. Domestic heating oils still in demand.

Eastern Gasoline Price Drops Half a Cent Per Gallon

By H. STANLEY NORMAN

NEW YORK, May 6.—The northeastern market for motor fuel felt the pressure of depressed Gulf Coast conditions last week and the price structure dropped a half cent per gallon throughout the territory. Socony-Vacuum Oil Co., Inc., took the leadership in dropping prices, but the reduction was met by other major marketers and had been presaged by weakness in the tank-car market for 2 weeks.

Motor-fuel price reductions were made at other sections of the eastern seaboard, including several points in the Standard of New Jersey territory and its subsidiary in Louisiana. Reductions of 1.65 to 2.45 cents per gallon were made in the tank-car prices at some points in North Carolina.

In making the general reduction of a half cent in New York and New England effective May 1 and 2, Socony-Vacuum said the downward revision partially reflects recent weakness which had been reported on the Gulf cargo-gasoline market but at the same time consideration has been given to the continued firmness in tanker rates from the Gulf Coast to the North Atlantic seaboard. Tank-wagon prices were also reduced a half cent per gallon in undepressed markets and some adjustments were made in depressed areas where local competitive conditions required it.

Although consumption of light burning oils has slumped sharply in recent weeks, prices are holding their late-winter levels and refiners are definitely launched on a program of building up reserve stocks of these products. Despite lateness of the season, the past 2 weeks in this section have been damp, and limited operation of furnaces was necessary. Furthermore, consumption of light oils in the distillate range will be higher as time passes, reflecting the expanded use of diesel engines in general industry. There is a very evident reluctance on the part of refiners to lower light fuel-oil prices simply because the period of peak consumption has ended. Contract prices covering deliveries next winter are at a level where accumulation of stocks, even at the expense of providing additional storage, would appear to be a profitable operating policy.

Residual fuel oil on the Gulf Coast is in a softer market position and distributors in this territory report no difficulty in locating abundant supplies at 75 cents per barrel and a few sales have been reported at as low as 70 cents.

At the end of last week there was nothing in the market to show any change in export conditions. Managers of export departments report conditions have never been duller. There is the probability, however, that with the Mediterranean shipping abandoned by the British this country will be looked to for supplying larger volumes of products for air, land, and water warfare. They admit, however, that this view is merely speculation and say tangible information to support it is entirely lacking at the moment.

Unbranded motor-fuel meeting "regular" specifications was available in the New York tank-car market at 5¾ cents and even this price might be shaded slightly in a few directions. Several suppliers are still quoting 6 cents. Continued firmness of the tanker rates is helping to prevent a more substantial downward movement of the motor-fuel market.

Gasoline of 60-64-octane specification was dropped a quarter of a cent at Boston and was freely available there to tank-car purchasers at 6.5 cents. The same grade of motor fuel was offered for as little as 5¾ cents at more southern points in the Atlantic seaboard zone and offers of 72-74-octane gasoline on the Gulf Coast at 4.5 cents were reported.

Gas oil dropped a half cent on the Gulf with quotations ranging from 3.5 to 4 cents per gallon. Absence of spot business was reported by practically all Gulf refiners who admitted the current range of quotations was unsupported by actual sales and merely represented a cross-section of opinions. In general, gasoline prices on the Gulf were down from ⅝ to 1.5 cents per gallon.

The Gulf price on Bunker C fuel oil was reported unchanged at a range of 75 to 85 cents per barrel. The current Bunker C quotations represent a decline of 25 cents per barrel on the low side of the market in the past month. Evidence that the softer Bunker C fuel quotations on the Gulf are beginning to register in the North Atlantic seaboard came last week when a Philadelphia supplier was reported offering a cargo at New York at $1.35 per barrel. Most suppliers in this territory, however, continue to ask $1.50 per barrel and the volume of business is said to be fair.

Gulf refiners continue to ask 4½ to 4⅝ cents per gallon for kerosene, while the tank-car price in New York is firm at a range of 5.9 to 6 cents per gallon. Consumption is tapering off in keeping with warmer weather, but there does not appear to be any particular weakness. Diesel oil to the marine trade in New York is firm at $2.20 to $2.35 per barrel and for shore-plant consumption most suppliers are quoting 5.4 cents per gallon.

A reduction of a cent per gallon on bright stock was reported from the western Pennsylvania refining district. Improvement appeared to be developing in the shipping instructions against domestic contracts, but the export-buying wave, which sent lubricating-oil prices to new highs early this year, is absent. There are still large volumes of lubricating oil in terminal tankage purchased during the early weeks of the war for which no boats are available for delivery.

The tanker rates last paid for moving cargoes from the Gulf to North Atlantic ports range from 55 to 65 cents per barrel, but it is doubtful that any tonnage is available today at these prices.

Gulf Coast Markets

HOUSTON, Tex., May 7.—Further weakening of fuel and burning oils was indicated in Gulf Coast refinery markets the past week, though efforts to locate material at some of the low prices reported as quoted proved unsuccessful. It was reported generally that No. 2 fuel had been offered as low as 3½ cents. Several sellers sought futilely to find the sources of these quotations, stating they would buy all they could find at that figure as they had contracts to fill at higher prices. This material was readily available at 3⅝ cents. Some sellers still were trying to hold out for 3¾ cents.

Bunker C fuel was easily available at 72 cents, although several sources of supply continued to quote up to 90 cents. It was reported this material had been offered at 71 cents, but there was no verification of actual spot purchases.

The breaking of fuel and burning-oil prices is attributed largely to the competition of Mexican oils offered in increasing volume at Gulf Coast centers. Demand is holding up fairly well, but with Mexican oils available at lower prices, sellers of domestic material are forced to meet the competition.

Gasolines continued the chief enig-

(Continued on Page 151)

A. P. I. Weekly Refinery Statistics

Week Ended May 4, 1940

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	23,615,000	7,948,000	5,975,000	535,000
Appalachian	91.0	4,140,000	615,000	397,000	118,000
Ind., Ill., and Ky.	88.5	18,179,000	3,129,000	2,587,000	548,000
Okla., Kans., and Mo.	76.9	8,161,000	1,880,000	995,000	291,000
Inland Texas	59.6	1,924,000	1,453,000	279,000	108,000
Texas Gulf	85.3	15,308,000	5,096,000	3,380,000	858,000
Louisiana Gulf	97.6	2,972,000	1,072,000	819,000	127,000
N. Louisiana and Ark.	51.5	620,000	418,000	206,000	36,000
Rocky Mountains	55.5	1,699,000	606,000	149,000	37,000
California	87.3	18,375,000	78,656,000	9,656,000	485,000
Total reported	84.9	94,993,000	100,873,000	24,443,000	3,143,000
Est. unreported	.....	7,070,000	2,170,000	1,215,000	362,000
*Est. total	.....	102,063,000	103,043,000	25,658,000	3,505,000
*Est. total previous wk.	.....	102,452,000	102,552,000	24,997,000	3,555,000
*May 5, 1939	.....	87,209,000	109,459,000	26,600,000	3,275,000

*Bureau of Mines.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ended April 27, 1940	256,670,000 barrels
Week ended April 20, 1940	254,881,000 barrels
Week ended April 29, 1939	278,444,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

Retail Oil Markets

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of May 7, 1940

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Chicago, Ill.	15.1	13.1	4.0	10.0
Decatur	15.1	12.1	4.0	9.5
Joliet	15.1	13.6	4.0	10.0
Peoria	15.1	12.7	4.0	10.0
Quincy	14.9	13.4	4.0	9.8
Davenport, Ia.	15.1	13.6	4.0	‡10.0
Des Moines	14.9	12.4	4.0	‡9.8
Mason City	15.3	13.8	4.0	‡10.2
Duluth, Minn.	16.9	15.4	5.0	10.8
Mankato	16.5	15.0	5.0	10.4
Minneapolis	16.5	14.5	5.0	10.4
LaCrosse, Wis.	16.5	15.0	5.0	10.4
Green Bay	16.9	15.4	5.0	10.3
Milwaukee	16.3	14.8	5.0	10.2
Detroit, Mich	13.6	12.1	4.0	7.6
Grand Rapids	13.2	11.7	4.0	9.0
Saginaw	14.2	12.7	4.0	9.3
Evansville, Ind.	16.6	15.1	5.0	†10.5
Indianapolis	16.8	14.3	5.0	†10.2
South Bend	16.8	15.3	5.0	†10.2
Fargo, N. D.	16.2	16.2	5.0	11.6
Huron, S. D.	17.0	15.5	5.0	10.9
Kans. City, Mo.*	14.4	12.9	4.0	8.0
St. Louis*	14.7	12.7	4.0	8.0
St. Joseph	14.4	12.0	4.0	7.9
Wichita, Kans.	13.3	11.6	4.0	7.5

*State tax 2 cents, 1-cent city tax, and 1-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off; minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective April 18, 1940, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 8.75 cents; 100-149 gal., 7.75 cents; 150 gal. and over, 7.25 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7 cents; 400 gal. and over, 6.5 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7 cents; 400 gal. and over, 6.5 cents. Stanolex fuel oil A, 1-399 gal., 5.5 cents; 400-799 gal., 4.5 cents; 800 gal. and over, 4.25 cents. Stanolex fuel oil B, 1-399 gal., 5.5 cents; 400-799 gal., 4.5 cents; 800 gal. and over, 4.25 cents. Stanolex bunker C fuel oil, 1-999 gal., 4.25 cents; 1,000 gal. and over, 3.25 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Dlr. vided dlr.	Incl. tax	Kero. tank wag.
Ohio points	15.5	14.5	5.0	*12.0

*Includes state tax of 1 cent.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
Atl'tic City, N. J.	11.6	12.7	4.0	8.4
Newark	11.6	12.7	4.0	8.4
Annapolis, Md.	13.35	14.35	5.0	9.5
Baltimore	12.75	13.75	5.0	9.0
Cumberland	14.15	16.15	5.0	10.0
Wash'gton, D. C.	11.00	12.00	3.0	9.5
Danville, Va.	14.95	17.45	6.0	11.5
Norfolk	13.75	16.25	6.0	11.0
Petersburg	14.05	16.55	6.0	11.7
Richmond	14.05	16.55	6.0	11.0
Roanoke	15.25	17.75	6.0	11.5
Charles'n, W. V.	14.55	17.05	6.0	12.6
Parkersburg	13.85	15.35	6.0	11.2
Wheeling	14.85	16.75	6.0	11.8
Charlotte, N. C.	16.90	16.50	7.0	11.8
Hickory	17.45	18.95	7.0	12.3
Mt. Airy	17.30	18.80	7.0	12.2
Raleigh	16.65	16.50	7.0	11.5
Salisbury	16.95	16.00	7.0	11.9
Charleston, S. C.	14.75	17.25	7.0	9.25
Columbia	15.60	18.10	7.0	11.5
Spartanburg	16.30	18.80	7.0	12.2

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery; 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

Discounts for kerosene, 1 cent off tank-wagon price for 25 gal. or more under contract (contract not necessary in Baltimore), except no discount in New Jersey.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Net dlr.	Incl. tax	Kero. tank wag.
Atlanta, Ga.	17.5	17.5	7.0	11.0
Augusta	17.0	17.0	7.0	10.0
Macon	16.5	16.5	7.0	10.0
Savannah	16.5	16.5	7.0	9.0
Birmingham, Ala.	17.5	17.5	8.0	9.0
Mobile	18.0	18.0	9.0	8.0
Montgomery	19.0	19.0	9.0	9.0
Jackson, Miss.	16.0	16.0	7.0	10.0
Vicksburg	16.0	16.0	7.0	9.5
Jacksonville, Fla.	17.0	17.0	8.0	8.0
Miami	17.0	17.0	8.0	8.0
Pensacola	18.0	18.0	9.0	8.5
*Tampa	17.0	20.0	8.0	8.0
Lexington, Ky.	15.5	15.5	6.0	10.0
Covington	14.5	14.5	6.0	9.5
Louisville	14.5	14.5	6.0	9.0
Paducah	15.5	15.5	6.0	9.0

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

*Temporary discounts to tank-wagon consumers in Tampa 3 cents per gallon below consumer tank-wagon price on Crown gasoline.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
Albany	11.6	13.6	5.0	8.3
*Met. N. Y.: Manhat., Bronx, Queens, Brklyn., Staten Island	11.7	12.8	5.0	8.5
Buffalo	12.6	14.5	5.0	7.9
Rochester	12.8	14.8	5.0	8.5
Syracuse	12.2	14.0	5.0	8.8
Portland, Me.	11.6	13.5	5.0	8.5
Manchester, N.H.	12.3	14.5	5.0	8.9
Burlington, Vt.	12.1	14.4	5.0	8.7
Boston, Mass.	10.5	11.5	4.0	8.5
Worcester	11.1	12.1	4.0	8.0
Hartford, Conn.	10.9	12.8	4.0	8.4
New Haven	10.8	11.8	4.0	7.5
Providence, R. I.	10.5	12.5	4.0	8.5

*Does not include 2 per cent city sales tax, which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.

Effective February 15, 1939, the company changed its commercial consumer policy in New York and in New England points for tank-wagon delivery to the following: Annual purchases 10,000 gal. and under, tank-car price plus 2 cents per gallon; annual purchases 10,000 gal. up to 50,000 gal., tank-car price plus 1.5 cents per gallon; annual purchases 50,000 to 200,000 gal., tank-car price plus 1 cent per gallon; annual purchases 200,000 gal. and over, tank-car price plus ½ cent per gallon. Private consumers pay undivided dealer price, plus 2 cents per gallon. Private consumers receiving full compartment deliveries of at least 200 gal. receive a discount of ½ cent per gallon.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
Philadelphia, Pa.	12.0	13.5	5.0	10.5
Pittsburgh	13.0	14.5	5.0	10.5
Allentown	13.0	14.5	5.0	10.5
Erie	13.0	14.5	5.0	10.0
Scranton*	12.5	14.0	5.0	10.5
Altoona	13.0	15.0	5.0	10.5
Dover, Del.		14.0	5.0	10.5
Wilmington		13.5	5.0	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

*Voluntary discount of 1 cent allowed to dealers only.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck	Serv. sta.	Incl. tax	Kero. tank wag.
San Francisco	17.5	18.5	4.0	11.5
Los Angeles	17.0	18.0	4.0	10.0
Fresno, Calif.	18.5	19.5	4.0	12.5
Phoenix, Ariz.	20.0	21.0	6.0	*17.5
Reno, Nev.	20.5	21.5	5.0	13.5
Portland, Ore	20.0	21.0	6.0	13.5
Seattle, Wash.	20.0	21.0	6.0	13.50
Spokane	21.5	22.5	6.0	16.50
Tacoma	20.0	21.0	6.0	13.50

*Includes 5-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Denver, Colo.	13.0	...	5.0	10.5
Grand Junction	17.5	...	5.0	12.5
Pueblo	13.0	...	5.0	9.0
Casper, Wyo.	16.5	...	5.0	11.5
Cheyenne	14.0	...	5.0	11.0
Billings, Mont.	18.0	...	6.0	12.0
Butte	18.0	...	6.0	13.0
Great Falls	18.0	...	6.0	12.0
Helena	18.5	...	6.0	12.5
Salt Lake, Utah	15.5	15.5	5.0	14.0
Boise, Idaho	21.1	21.1	6.0	16.0
Twin Falls	21.1	21.1	6.0	16.5
Albu'que, N. M.	13.5		6.5	10.0
Roswell	16.0	16.0	6.5	8.0
Roswell	16.0	16.0	6.5	8.0

*Includes city tax of 0.5 cent. †Includes state tax of 1 mill.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
New Orleans, La.	13.75	16.25	8.0	†11.0
Baton Rouge	14.75	17.25	8.0	‡10.5
Alexandria	14.75	17.25	8.0	‡10.5
Lafayette	15.00	17.50	8.0	‡10.0
Lake Charles	14.75	17.25	8.0	‡10.0
Shreveport	13.50	16.00	8.0	$9.0
Knoxville, Tenn.	18.00	19.50	8.0	12.5
Memphis	16.00	17.50	8.0	11.0
Chattanooga	17.50	19.00	8.0	12.0
Nashville	17.00	18.50	8.0	11.5
Bristol	18.25	17.75	8.0	12.0

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

†Includes 1-cent parish tax and 1-cent state tax. ‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Texarkana, Ark.	13.0	...	5.0	7.0
Fort Smith	14.5	...	5.0	7.5
Little Rock	16.75	...	7.5	8.0
Muskogee, Okla.	13.0	12.0	5.0	7.0
Oklahoma City	11.0	10.0	5.0	6.5
Tulsa	11.0	...	5.0	6.0

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Omaha	16.5	12.5	6.0	9.0
McCook	16.5	13.9	6.0	9.0
Norfolk	16.5	14.4	6.0	9.5
North Platte	17.8	14.0	6.0	10.0
Scottsbluff	18.5	15.5	6.0	10.0

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Dallas, Tex.	12.0	16.0	5.0	7.0
Fort Worth	13.0	17.0	5.0	8.0
Houston	13.5	17.5	5.0	7.0
San Antonio	13.0	17.5	5.0	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank wag.	Incl. tax	Kero. tank wag.
Halifax, N. S.	25.0	10.0	19.0
St. John, N. B.	25.0	10.0	19.0
Montreal, Que.	24.0	8.0	16.5
Toronto, Ont.	23.5	8.0	16.0
Hamilton, Ont.	23.5	8.0	16.0
Winnipeg, Man.	26.5	7.0	20.5
Brandon, Man.	28.0	7.0	22.9
Regina, Sask.	25.0	7.0	20.0
Saskatoon, Sask.	28.0	7.0	23.0
Edmonton, Alta.	25.9	7.0	20.0
Calgary, Alta.	23.0	7.0	18.0
Vancouver, B. C.	23.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Tank-Wagon Changes

Standard Oil Co. (Kentucky) April 19 reduced consumer tank-wagon gasoline 4 cents and advanced net dealer gasoline 2 cents in Tampa; April 29, reduced consumer tank-wagon and net dealer gasoline 0.5 cent in Pensacola.

Standard Oil Co. of Louisiana April 22 reduced tank-wagon kerosene 2.5 cents in Lake Charles.

Standard Oil Co. of New Jersey April 27 reduced dealer tank-wagon gasoline 1.9 cents in Charlotte, 1.65 cents in Raleigh, and 2.45 cents in Salisbury.

Standard Oil Co. of California May 1 reduced tank-wagon kerosene 0.25 cent

(Continued on Page 151)

Prices of Refined Products

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of May 7, 1940

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:

72-74 octane (regular)	.04⅝	.04¾
63-66 octane	.04¼	.04¼
60 octane and below	.03¾	.03⅞
60-62 400 grades:		
72-74 octane (regular)	.04⅝	.04¾
63-66 octane	.04¼	.04¼
60 octane and below	.03¾	.03⅞

NORTH TEXAS—

U. S. Motor grades:

72-74 octane (regular)	.04⅝	.04¾
63-66 octane	.04¼	.04¼
60 octane and below	.03¾	.03⅞
60-62 400	.03¾	.03⅞

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:

72-74 octane (regular)	.05⅛	.05⅜
63-66 octane	.04⅝	.04⅞
60 octane and below	.04¼	.04½

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:

72-74 octane (regular)		.04¾
60 octane and below		.04

CHICAGO (Based on Group 3)—

U. S. Motor grades:

72-74 octane (regular)	.04¾	.04⅞
63-66 octane	.04⅝	.04½
60 octane and below	.04	.04⅛
60-62 400 grades:		
72-74 octane (regular)	.04¾	.04⅞
63-66 octane	.04⅝	.04½
60 octane and below	.04	.04⅛

PENNSYLVANIA (Inland refineries)—

74-76 octane (regular)		.06
72-74 octane		.05¾
58-62 U. S. Motor	.04½	.05

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.07	.08
54-58 U. S. Motor	.05¾	.07

EAST COAST (domestic)—

U. S. Motor, 65 and above:

*New York (Bayonne)	.05¾	.06¼
Philadelphia	.06	.06¼
Boston	.06	.06¼
Baltimore	.06	.06¼
Charleston, S. C.	.06¼	.06½

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:

72-74 octane	.04¾	.05
70-72 octane (leaded)	.04½	.04¾
68-70 octane	.04¼	.04½
65-67 octane		.04¼

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.01¼
Grade 18-55	.01¾	.01⅞

NORTH TEXAS—

Grade 26-70		.01¼
Grade 18-55		.01½

CALIFORNIA—

75-85 375-390	.05¾	.06

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.01⅝

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 l.b.p., 110-flash, 540-550 e.p.	.03⅞	.04
41-43 gr., 300-320 l.b.p., 110-125 flash, 500-520 e.p.	.03⅞	.04
46-48 gr., 210-230 l.b.p., 480-max., e.p.		.04⅛

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.04
42-44	.04⅛

NORTH TEXAS—

41-43	.04

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04	.04¼

ARKANSAS (Ark. and N. La. del.)—

41-43	.04¼

PENNSYLVANIA (Inland refineries)—

45	.04⅞	.05
46	.05	.05⅛
47	.05⅛	.05¼

CHICAGO (Based on Group 3)—

41-43	.04	.04⅛
42-44	.04⅛	.04¼

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04½	.05¾

NEW YORK (Bayonne, N. J.)—

41-43	.059	.06

***GULF COAST (domestic)—**

41-43	.04½

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil		.03⅞
No. 1 prime white, 38-42	.03⅝	.03¾
No. 1 straw, 38-40	.03½	.03⅝
No. 2 straw, 32-36	.03⅜	.03½
No. 2 dark, 32-36	.03¼	.03⅜
No. 3 zero to 10, 28-32		.03¼
No. 3, 15 and above, 28-32	.02⅞	.02⅞

NORTH TEXAS—

No. 1 prime white, 38-42	.03⅜	.03⅞
No. 1 straw, 38-40	.03⅜	.03¾

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03	.03⅛

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03⅛	.03⅜

CHICAGO (Based on Group 3)—

Range oil	.03¾	.03⅞
No. 1 prime white, 38-40	.03⅜	.03⅞
No. 1 straw, 38-40	.03½	.03⅝
No. 2 straw, 32-36	.03⅜	.03½
No. 2 dark, 32-36	.03¼	.03⅜
No. 3, zero to 15, 28-32	.03¼	.03⅜
No. 3, 15 and above, 28-32	.02⅝	.02⅞

NEW YORK (Bayonne, N. J.)—

*No. 1	.059	.060
*No. 2		.054
*No. 4		.054

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.02⅝	.02¾
No. 5, low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.45	.50

NORTH TEXAS—

U.G.I. gas oil, under 35	.02⅝	.02¾
No. 5, low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.45	.50

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.65	.70

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02⅝	.02⅞
No. 5, low pour point, 18-22	.75	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pour point, 10-16	.60	.70
No. 6, 15 and above, 10-16	.45	.55

PENNSYLVANIA (Inland refineries)—

36-40	.03⅞	.04⅛

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.15	1.25
24 plus diesel, per bbl.	1.15	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.65	.75
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.60	.75
10-17 (high sulfur)	.50	.65
San Joaquin Valley:		
10-18 (tank cars)	.50	.70
24 plus diesel, per bbl.	1.15	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.80	.85

GULF COAST—

No. 2 fuel	.03⅝	.03¾
43-47 diesel	.03⅞	.04
48-52 diesel		.04
53-57 diesel	.04	.04¼
58-and-above diesel	.04¼	.04½
Bunker C (bulk cargoes)	.72	.80
Bunker C (bunkers)	.80	.95

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil	.053	.056
28-30 diesel (lighterage 6¼c per bbl.)	2.20	2.35
28-30 diesel (tank cars)	.05	.056
Bunker C (to ocean-going ships in N. Y. Harbor)		1.50
Industrial fuel (tank cars)	.035	.04

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25	.23
150-160 D, 0-10	.19
150-160 D, 10-25	.18½
100-110 D, 0-10	.18
100-110 D, 10-25	.17½
Steam refined:	
600 dark green (untreated)	.07½

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):	
10 pour point	.21½
15 pour point	.20½
25 pour point	.19
Steam refined:	
600	.11½
650	.14
600 flash	.15½
630 flash	.17

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:	
150-3	.10½
180-3	.11½
200-3	.12
250-3	.13
280-3	.14
280-4	.13½
300-3½	.14½
350-3½	.15
400-3½	.16
500-3½	.17
600-3½	.17½
100-2½ paraffin oil, 10-25	.06¾
10-25 pour point:	
200-3	.11½
250-3	.12½
280-3	.13½
280-4	.13

GULF COAST—

Pale oils:		
200-3	.07¼	.07½
300-3	.07⅝	.08
500-3½	.08½	.09
750-3½	.09	.09½
1,200-3½	.09¾	.10
2,000-4		.10¼
Red oils:		
200-5-6	.07	.07¼
300-5-6	.07½	.07⅝
500-5-6	.08¼	.08⅝
750	.08⅝	.09¼
1,200-5-6	.09⅝	.09⅞

CALIFORNIA (moving to dom. market)—

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		.23
10 pour point		.22
15 pour point		.21
25 pour point	.19½	.20
200 vis. at 70° F., 3 color:		
Zero pour point		.25½
10 pour point		.24½
15 pour point		.23½
25 pour point	.21½	.22

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.04¾	.05

PENNSYLVANIA (Inland refineries)—

122-124 (A.m.p.) w.c. scale		.04¾
124-126 (A.m.p.) w.c. scale		.04¾

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax		.0630
128-130 (A.m.p.) wax		.0640
130-132 (A.m.p.) wax		.0660
133-135 (A.m.p.) wax		.0685
135-137 (A.m.p.) wax		.0710
Crude scale:		
124-126 (A.m.p.) w.s.		.0475
124-126 (A.m.p.) y.s.		.0475
Petrolatum in barrels, carload lots:		
Dark green	.02625	.03125
Amber	.02875	.03375
Extra amber	.03000	.03625
Lily white	.05125	.05875
Snow white	.06125	.06875
Cream	.04125	.04875

Export Prices

GASOLINE

GULF COAST—

64-66 375	.04¼	.04⅞
61-63 390	.04¼	.04⅝
60-62 400	.04¼	.05⅛

LOS ANGELES—

U. S. Motor grades:

Above 69 octane	.06¼	.06½
65-69 octane	.05⅝	.06¼
60-65 octane	.05½	.05⅝

KEROSENE

GULF COAST—

41-43 water white	.04½	.04⅝

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbl.)—

Cylinder stocks:		
600 S.R. unfiltered	.19	.21½
630 S.R. unfiltered	.20	.23½
600 flash, S.R.	.21	.24⅝
630 flash, S.R.	.26	.28
Bright stock:		
Light, 25 pour point	.29	.31½

NEUTRAL OIL

200-3 color	.30	.31
150-3 color	.29	.31½

PARAFFIN WAX

NEW YORK (prices per pound)—

123-125 A.m.p.		.06⅝
125-127 A.m.p.		.06⅝
128-130 A.m.p.		.07
133-135 A.m.p.		.07⅝
135-137 A.m.p.		.08¼
Crude scale:		
124-126 w.s.		.04¾
124-126 y.s.		.04¾

Market Record of Active Oil Stocks

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1940 High	1940 Low	Week ended May 4 High	Week ended May 4 Low	Week ended May 4 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1938	Com. sh. earn. 1937	1939 High	1939 Low	1938 High	1938 Low
58½	53	56¼	54½	55	Amerada Corp.	788,675	N.P.	50cQ	4-30-40	$2.00	$2.07	$3.04	74½	50	78	55
25¼	20½	25¼	23⅞	24⅞	Atlantic Refining	2,663,999	$25	25cQ	3-15-40	1.00	1.40	3.51	24¾	18⅛	27⅝	17¾
16⅝	13¾	15⅝	15	15½	Barber Asphalt Co.	390,223	$10	25c	5-21-40	.25	—.85	1.91	21	10¼	23¾	12⅛
13⅜	10¾	11⅜	11	11	Barnsdall Oil Co.	2,250,344	$5	15c	6-8-40	.90	1.26	.85	19½	11⅛	21⅜	10⅛
8⅛	7	7½	7⅛	7½	Consolidated Oil Corp.	13,751,846	N.P.	20cQ	5-15-40	.80	.55	1.48	9⅜	6½	10¾	7
25	22½	23⅞	23½	23¾	Continental Oil of Delaware	4,682,581	$5	25cQ	3-25-40	1.00	1.10	2.98	31½	19⅞	35¾	21¼
6⅞	5½	6½	5⅞	5⅞	Houston Oil	1,098,618	$25	....	10-17-30	....	.83	.94	9⅝	4½	9¾	5
14⅜	11¾	13½	13⅛	13½	Lion Oil Refining	435,815	N.P.	25cQ	4-20-40	1.00	2.09	2.17	18⅛	10	25⅛	15⅝
16⅜	13¾	16¼	15⅜	16¼	Mid-Continent Petroleum	1,857,912	$10	40c	6-1-40	.60	.56	2.86	18	11⅛	22⅝	12¼
11	9½	10⅝	10⅛	10½	Mission Corporation	1,379,245	$10	40c	12-15-39	.65	1.04	1.31	14⅞	8¾	17⅜	10⅝
9¾	7⅝	9⅜	8⅝	8½	National Supply	1,155,517	$10	....	12-22-37	....	—.79	4.90	15½	5⅝	23	12½
8½	6½	8½	7¾	8½	Ohio Oil Co.	6,563,377	N.P.	20c	6-15-40	....	.25	1.30	10½	6	14⅞	8⅞
8¼	6⅞	8⅛	7⅛	8⅛	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	.40	1.22	1.39	11⅞	7	15⅞	10¼
8½	6¾	8¼	8	8	Pan American Pet. Trans.	4,702,945	$5	....	12-31-37	....	.08	1.18	8¾	5	9¼	6¼
41¾	36½	39⅝	38¾	39¼	Phillips Petroleum	4,449,052	N.P.	50cQ	3-1-40	2.00	2.03	5.42	46½	31¼	44⅜	27¼
22¾	20½	21⅛	20⅝	20⅝	Plymouth Oil Co.	1,006,200	$5	35cQ	3-30-40	§1.40	2.59	2.85	24	17⅛	25⅜	15
11¼	8⅛	11⅛	10½	10⅞	Pure Oil Co.	3,982,031	N.P.	25c	12-20-39	.25	.38	2.15	11⅝	6⅛	13½	8¼
8⅜	6¾	7⅜	7⅛	7⅜	Richfield Oil Corp.	4,010,000	N.P.	50c	12-18-39	.50	.51	.35	10¼	6⅝	9⅞	5
20	17¼	17½	17¼	17⅝	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	6-15-40	1.00	1.52	1.97	24⅜	15½	27½	15½
13⅛	10⅝	13	12⅜	12⅝	Shell Union Oil	13,070,625	N.P.	25c	12-20-39	.50	.72	1.44	17¼	9⅞	18⅜	10
22⅝	18½	21⅝	20¼	21⅝	Skelly Oil	995,349	$15	25c	1-30-40	.75	2.27	6.07	29½	15½	34⅜	18½
12½	10⅞	11⅛	10⅞	10⅞	Socony-Vacuum	31,206,071	$15	25cSA	3-15-40	.50	1.29	1.82	15⅛	10¼	16⅜	10¾
26⅛	22	22⅝	22	22	Standard Oil of California	13,004,153	N.P.	25cQ	3-15-40	1.10	2.22	3.17	33⅝	24¼	34⅞	25⅛
29	25	28	27½	28	Standard Oil (Indiana)	15,272,020	$25	25c	3-15-40	1.25	1.82	3.66	30	22¾	35½	24¾
46½	40	42⅞	41½	42¾	Standard Oil of New Jersey	26,618,065	$25	75c¶	12-15-39	‖1.25	2.86	5.64	53½	38	58⅜	39⅝
65⅞	56¼	65⅞	62½	65⅞	Sun Oil	2,316,484	N.P.	25c*	6-15-40	1.00	1.07	3.86	66	45¾	65¼	45
2½	1⅞	2	1⅞	2	Superior Oil Corp.	1,388,979	$1	10c	12-28-38	....	.24	.32	3⅝	1¾	4¼	1¾
47⅝	42⅜	46⅞	46	46⅜	Texas Corp.	10,876,882	$25	50cQ	4-1-40	2.00	2.13	5.02	50¾	32½	49⅝	32⅝
4¼	3½	4	3⅞	3⅞	Texas Gulf Producing Co.	888,146	N.P.	10c	6-15-40	.20	.86	.68	5¾	3⅛	5⅞	2⅝
8⅝	7½	8	7¾	7¾	Texas Pacific Coal & Oil	888,236	$10	10c	6-1-40	.40	1.16	1.11	11⅜	7	12½	7
11⅞	10	11¾	11½	11⅞	Tide Water Associated	6,375,253	$10	25c	6-1-40	.80	1.28	2.08	14¼	9½	15⅜	10⅛
17½	15	16½	15	15⅛	Union Oil Co. of California	4,666,270	$25	25c	5-10-40	1.05	1.47	2.58	19¾	15⅛	22½	17⅛
27¼	22¾	27¼	26⅝	26⅝	Union Tank Car Co.	1,177,381	N.P.	40c†	3-1-40	1.30	1.16	1.70	24¼	20⅛	23½	20
3⅝	2¾	2⅞	2¾	2¾	Wilcox Oil & Gas	487,568	$5	10c	2-15-40	....	.52	.24	4¼	2⅜	3½	1⅝

*Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. §Also 4 per cent in stock. ‖Also 2½ per cent in stock. ¶Also 1½ per cent in stock. —Deficit.

New York Curb Exchange

1940 High	1940 Low	Week ended May 4 High	Week ended May 4 Low	Week ended May 4 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1938	Com. sh. earn. 1937	1939 High	1939 Low	1938 High	1938 Low
10⅝	6⅛	10⅝	8⅝	10⅜	American Republics Corp.	1,308,049	$10	10c	7-11-38	....	—$0.22	$0.27	11⅜	5⅛	11⅜	5
3¼	1⅞	2⅝	1⅞	2⅛	Bridgeport Machine Co.	270,000	N.P.	$1.25	12-30-37	....	—.14	1.90	7¼	2½	10¼	4⅞
43	28	40½	40	40	Buckeye Pipe Line Co.	200,000	$50	$1	6-15-40	$2.50	2.36	4.02	34¾	26½	39	22½
117	110	117	117	117	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	3-29-40	6.00	5.32	6.73	130	108⅝	128	97
6¾	4	6¾	4⅝	6	Cities Service (new)	3,704,067	$10	....	6-1-32	....	.23	1.02	9¼	4¼	11	5⅛
2⅛	1⅛	2	2	2	Cosden Petroleum	462,551	$1	....	.....	....	....	.19	2¼	⅛	2⅜	⅞
24¼	19¾	24¼	21½	23⅞	Creole Petroleum	6,975,383	$5	50cSA†	12-15-39	1.00	1.64	1.61	28	16¾	27½	17½
4⅜	4	4⅛	4	4⅛	Darby Petroleum	351,390	$5	25cSA	1-15-39	.25	....	1.36	7⅛	3⅝	10¼	5½
2	1½	1½	1½	1½	Derby Oil & Refining	263,162	N.P.	....	.....	....	—.91	1.34	2⅝	1½	3½	1½
31	23½	..	..	..	Eureka Pipe Line	50,000	$50	75c	5-1-40	2.00	—.37	—.12	23	15½	31	16
39⅞	34	39⅛	37½	38	Gulf Oil Corp.	9,076,202	$25	25cQ	4-1-40	1.00	1.43	3.51	45⅛	29¼	46⅞	33
68	58	61½	60	61	Humble Oil & Refining	8,987,840	N.P.	62½c	4-1-40	2.00	3.98	5.22	71	52½	72⅝	56
12⅜	8⅝	9⅝	8⅝	9⅝	Imperial Oil of Canada	26,965,078	N.P.	37½c†	12-1-39	1.00	.96	.98	17	11⅜	19½	14⅛
7¾	5¾	7⅜	7¼	7¼	Indiana Pipe Line	300,000	$10	10c	5-15-40	.50	.47	1.03	7¼	5½	9⅜	6
19¾	14	15⅝	14	15½	International Petroleum	14,324,088	N.P.	75c	12-1-39	1.75	1.98	....	27½	17	31¼	21
2¾	2¼	2½	2½	2½	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	....	.14	.17	3¾	2⅛	5	2⅛
10⅜	9⅝	10⅜	10¼	10⅜	Lone Star Gas	5,553,747	N.P.	20c	4-22-40	.70	.88	1.14	10½	7⅛	10⅜	6⅝
6¼	5	5½	5¼	5⅜	Louisiana Land & Exp.	2,977,449	$1	10c	3-15-40	.35	.45	.58	7⅜	4	9⅜	6½
11	11½	15	15	15	Margay Oil Corp.	149,943	N.P.	25cQ	4-10-40	1.00	2.28	3.26	17	14½	24	16
8⅛	7¼	8	7⅞	8	Midwest Oil Co.	998,474	$10	45c	12-15-39	.90	.93	1.14	8¾	6⅝	9¾	6⅝
6¼	5¼	6¼	6	6¼	Mountain Producers	1,593,584	$10	30cSA	12-15-39	.60	.62	.76	6	4⅞	5¾	4½
13⅛	11⅞	12⅛	11⅞	12	National Fuel Gas	3,810,183	N.P.	25cQ	4-15-40	1.00	.84	.96	14	11¼	14⅝	11⅛
12½	8¾	11⅜	11⅜	11⅜	National Transit	509,000	$12.50	50c	12-15-39	.85	.88	1.19	9½	7¼	9¼	6½
1¼	1	..	..	..	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.02	.02	1⅜	1	2⅝	1½
7¾	5¼	7	7	7	New York Transit	100,000	$5	25c	4-15-40	.40	.16	.49	6	4	4½	3½
9⅞	6¾	8⅞	8¾	8¾	Northern Pipe Line	120,000	$10	40c	6-1-40	.30	.24	.78	7	4½	6	4
5½	4½	5¼	4¾	5¼	Pantepec Oil	2,857,000	$1	....	.....	....	....	....	7⅝	4	7¾	3½
3¼	2¼	2⅝	2½	2⅝	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.17	—.17	5	1¼	4½	1⅝
2¼	1⅞	2⅛	2⅛	2⅛	Ryan Consolidated	298,931	N.P.	....	.....	....	.29	.46	3	1⅞	4	2⅛
11¾	4⅞	9⅞	9¼	9¼	Southern Pipe Line	100,000	$10	15c	3-1-40	.30	—.27	.85	4⅞	3½	5⅝	3¼
44	37½	39⅞	38¾	38¾	South Penn Oil	1,000,000	$25	37½c	3-29-40	3.00	1.44	4.64	40½	26¾	39	28¾
35	22	..	..	..	Southwest Penna. Pipe Lines	35,000	$50	$5	4-1-40	2.00	—.41	.95	23	18	22¼	16½
20⅞	20	20⅝	20½	20⅝	Standard Oil of Kentucky	2,604,790	$10	25c	3-15-40	1.30	1.45	1.60	20½	17¼	18⅜	15
40½	28⅜	40½	37	40½	Standard Oil of Ohio	753,740	$25	25c	3-15-40	1.50	1.81	3.67	32⅜	17	22⅜	16¼
2	1¾	1⅞	1¾	1⅞	Sunray Oil	2,007,076	$1	5c	5-1-40	.10	.23	.42	2¾	1⅝	3¼	2
2⅝	2½	2⅝	2⅝	2⅝	Texon Oil & Land	936,024	$2	10c	3-29-40	.10	.56	.51	4	2⅝	5¼	3½
3⅜	2¼	2¾	2⅜	2⅜	Transwestern Oil Co.	750,000	$10	....	.....	....	—.12	.48	6	2½	7⅝	4¼
2⅛	1¼	1½	1¼	1⅜	United Gas Corp.	7,818,959	$1	....	.....	...	—.51	.25	3⅜	1⅛	5¼	2⅝

†Includes extras. —Deficit.

EQUIPMENT PROGRESS...

All-Purpose Mask Protects Against Gases and Suffocation by Smoke

The all-purpose gas mask, now introduced by Acme Protection Equipment Co., 3603 Liberty Avenue, Pittsburgh, Pa., is designed for the protection of industrial workers and of firemen. It is described as combining the advantages hitherto afforded by such a mask, with more effective protection against smokes, fumes and mists.

To all gas mask users who desire protection against smokes the manufacturer offers to send postpaid, free, a canister smoke tester through which the smoke-filtering ability of any canister can be visibly demonstrated in less than a minute. Such a test, it is agreed, reveals one fact about any mask, that it does or does not protect against smoke.

Among the merits of the new mask are said to be full vision for the user, protection against carbon monoxide and other gases, a long effective life. and a harmless chemical reaction that gives warning by odor as soon as protection against carbon monoxide commences to weaken.

Strain on Rotary-Hose Connections Is Relieved by Flexi-Ball Joint

Thornhill-Craver Co., Inc., Houston, Tex., manufacturer of Unibolt products, advocates the use of its Flexi-Ball joint on rotary-hose connections to relieve strain. The Flexi-Ball joint was designed originally for use on high-pressure steam lines, boiler headers, mud lines, and conveyors of oil, water, gas, gasoline, and air, which are subject to contraction or expansion.

As shown in the illustration the joint differs from the regular Unibolt Flexi-Ball joint only in that its hubs are threaded male by female. With a swing of 45°, it is obvious, according to the manufacturer, that such a flexible joint on both the standpipe and swivel connections will eliminate the strain placed on a hose by rigid connections at those points. The ball hub member, which is provided with a male thread, should receive the flow of fluid for maximum service.

All Unibolt Flexi-Ball joints employ the patented Unibolt coupling principle, which eliminates both threaded and flanged connections between the component parts of the joint. Unlike conventional ball joints, there are no threads to gall or freeze. Three-point suspension provided by the three tapered shelves, together with a radius machined in the back of the nut member, is said by the manufacturer, to assure even distribution of pressure on the packing when the single bolt is tightened.

New Sizes of Forged-Steel Flexible Couplings Are Added to Ajax Line

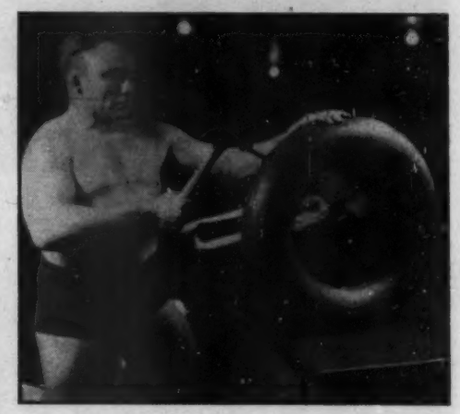
Two new forged-steel flexible couplings with 1 1/16-in. and 1 5/8-in. maximum bores respectively have been added to the line of Ajax Flexible Coupling Co., Westfield, N. Y.

"These new couplings provide extreme strength for heavy-duty service with a high factor of safety," according to Wayne Belden, vice president. Flanges forged from S.A.E. No. 1020 steel are specially designed to meet the demand for alloy-steel shafts carrying a high percentage of their torque capacity.

These two new sizes of Ajax couplings are built on the same principle as larger sizes. Rubber bushings and graphite bronze bearings provide resilient flexibility, positive drive, free end float, and eliminate noise, backlash and lubrication problems.

Wrestler's Blows Fail to Get Puff of Air From Puncture-Sealed Tube

There was no loss of prestige or pressure either when a Seal-o-matic puncture-sealing tube, manufactured by the B. F. Goodrich Co., Akron, Ohio, matched



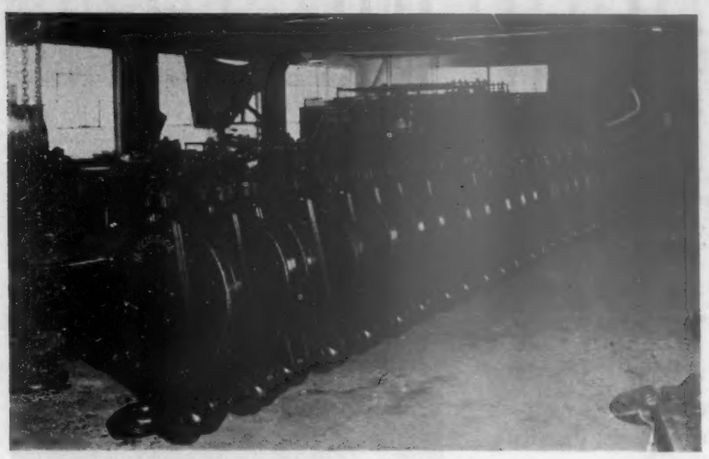
its two-way safety against the brawn of Everett Marshall, former world heavyweight wrestling champion and present title claimant. Instead of collapsing under his hammer blows the tube, though bristling with spikes, held its own with neither a wheeze nor loss of breath. A layer of self-sealing rubber composition on the inner side of the tube closes holes without loss of air when the penetrating object is removed, the wrestler learned.

FOREIGN VISITORS TO BE CARDWELL'S GUESTS ON AIR TRIP

For convenience of foreign visitors to the International Petroleum Exposition, Cardwell Manufacturing Co., Inc., is offering fast air trips between Tulsa and its plant in Wichita, Kans. After an interesting 45-minute flight, the guests will have an opportunity to inspect the company's manufacturing facilities and procedure. This factory visit will take 2 hours, following which the visitors will return to Tulsa by air. The Cardwell plant manufacturers drilling rigs, servicing hoists, and pipe-line construction equipment. The Cessna T50 used for this unusual air service has been christened the "Cardwell Clipper." Finished in

the familiar Cardwell yellow and black, and powered with two Jacobs engines in accordance with advanced safety procedure, it is capable of cruising up to 191 m.p.h., and the luxurious interior assures comfort. The Cessna Airplane Co., Wichita, is cooperating with Cardwell in this demonstration of the utility of aircraft.

LARGE SHIPMENT OF TUBING BLOCKS GOES TO ARGENTINE



The illustration shows 30 single-sheave tubing blocks with 26-in. diameter sheaves, shipped to the Argentine Government March 28, 1940. The blocks averaged 1,020 lb. each, and the total weight of the shipment, boxed for export, was 36,871 lb. This is one of the largest single tubing-block orders ever produced by the McKissick Products Corp., Tulsa, which has manufactured and sold thousands of blocks for handling tubing.

Fire-Killing Gas to Be Demonstrated Daily at Petroleum Exposition

Latest methods of extinguishing gasoline and oil fires with carbon dioxide, or dry ice, gas will be demonstrated in Skelly Drive at the International Petroleum Exposition in Tulsa daily during the week of May 18. A new 10-ton traveling laboratory containing equipment for building many sorts of fires and testing fire-fighting equipment will be used. Demonstrations of how various types of fire should be fought will be put on by engineers of Walter Kidde & Co. of New York, who developed the gas technique of fire fighting.

Carbon dioxide gas, the same vapor that makes soft

drinks effervescent, is carried in small pressure cylinders and is discharged through pipes or hoses at the fire. By diluting the normal oxygen content of the air to a point where combustion cannot be supported, the gas smothers flames in a few seconds. Though deadly to fire, the gas is dry and harmless to human beings and to clothing.

Originally developed for fighting fires in cargo boats and ocean liners, carbon dioxide is now used for smothering electrical fires as well as fires on gasoline, naphtha, and other combustible liquids. The vapor and "snow" which firemen throw on these flames is obtained from coke, and because it does not conduct electricity, it can be used safely on live electrical lines.

It is through the efforts of W. L. Walker that this mobile laboratory is to appear at the exposition, in order to instruct field men and fire-prevention engineers in safety work. W. L. Walker Co., Tulsa, is distributor for Walter Kidde & Co., Inc., manufacturer of Lux carbon dioxide or dry-ice gas extinguishers.

Strength and Reliability Shown in First Welds Made by Novices

A striking demonstration of the safety and reliability of welding, shown by tests of the first welds made by men who never before had held a welding arc, was an interesting feature of a 5-day course in welding design and practice held recently in Pittsburgh, Pa., under auspices of the Lincoln Electric Co., Cleveland, Ohio.

Five men among those attending the course—an assistant manager of a fabricating plant, a chief engineer of a construction company, a designing engineer, a shop foreman and a plant superintendent, none of whom had had any previous experience in welding—were each invited to make three welds. When tested, the welds of three of the men—the first they had ever made—exceeded 50,000 lb. per sq. in. tensile strength.

Experience and training obviously are required to do high-grade welding in all positions and under varying conditions, but this test, while made under what might be termed ideal conditions, is pointed out as showing the fundamental reliability and simplicity of arc welding.

TRADE LITERATURE

WESTINGHOUSE ELECTRIC & MANUFACTURING CO., East Pittsburgh, Pa. (Department 8-N-48).—Booklet 32-100, metal-enclosed switchgear, and "Quick Selector" Catalog 30-000.

THE LINCOLN ELECTRIC CO., Cleveland, Ohio.—Current number of the Stabilizer, featuring ingenious welding jobs under "How I Did It."

GENERAL PAINT CORP. (Hill, Hubbell & Co. division), Cleveland, Ohio.—New fourth edition "Book of Pipe Protection."

W. H. NICHOLSON & CO., Wilkes-Barre, Pa.—Catalog 240, describing Nicholson thermostatic, expansion, weight-operated, and piston-operated steam traps.

DEARBORN CHEMICAL CO., 310 South Michigan Avenue, Chicago.—Specifications, individually bound, on proper No-Ox-Id pipe-line coatings and No-Ox-Idized wrapper combinations for any set of soil conditions, with method of application. Company sends on request a questionnaire covering information required for recommendations.

INTERNATIONAL NICKEL CO., 67 Wall Street, New York.—"Seven Minutes With Seven Metals," a new guide to nickel alloys.

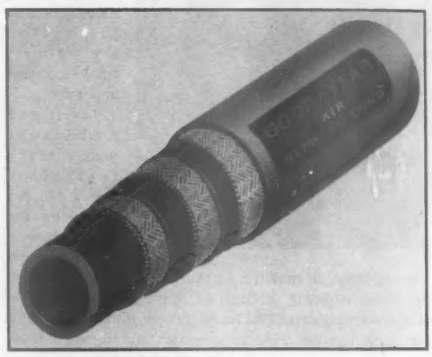
WESTINGHOUSE ELECTRIC & MANUFACTURING CO., East Pittsburgh, Pa.—Bulletin 3113, describing Type CR fractional and integral horsepower repulsion-start induction motors.

MANNING, MAXWELL & MOORE, INC., Bridgeport, Conn.—Bulletin 5-7000, Hancock steel valves.

INGERSOLL-RAND CO., 11 Broadway, New York.—Bulletin 2622, describing crossflow Type R Surface condensers.

Red Wing Air Hose Built Specially For Heavy-Duty Tool Service

Designed especially for heavy-duty pneumatic-tool service is Goodyear Tire & Rubber Co.'s new Red Wing air hose. Introduced by the company's mechanical goods division (Akron, Ohio) Red Wing air hose has three principal components. The tube is of nonporous rubber, resistant to action of hot and cold air. Lubri-



cants in the air will not cause swelling or flaking, obviating clogging of tools with rubber particles.

Reinforcement is provided with three plies of multiple-braided, special cabled cotton yarn, providing a high safety factor for working pressures and high resistance to blows and impacts. The cover is heavy-gage of soft red rubber with a high tensile strength, providing utmost resistance to cutting from rocks, ore, or other materials. It likewise is resistant to abrasion and the sun. Red Wing air hose is available in ¼-in., ¾-in. and 1-in. sizes.

FRANKS TRUCK-MOUNTED SPUDDER CAN GO TO 10,000 FT.

A spudder for deep Gulf Coast wells, capable of going to 10,000 ft., has been designed for mounting upon a truck by Franks Manufacturing Corp., Tulsa. The

spudder is portable, moving under its own power and taking drive from the truck motor.

The unit shown is on an A-8 International truck. It is 100 per cent friction-driven, with final friction drive on drilling drum and sand reel. The drilling drum has 52-in. flanges and 10-in. brakes and a spooling capacity of 9,000 ft. of ⅞-in. line. The sand reel has 42-in. flanges, 8-in. brakes and will spool 8,000 ft. of ¾-in. line. It has an independently driven cathead. The power is from the PA 100 International truck motor through a power takeoff. The unit stays within state laws limiting the width of any vehicle used over the highways to under 8 ft.

Sealtite Drilling-Control Instrument Built to Eliminate Fluid Leakage

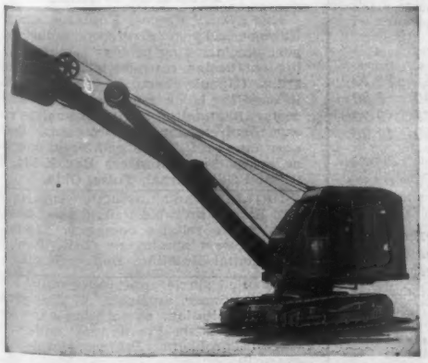
A new drilling-control instrument, especially built to eliminate fluid leakage, has been introduced by Martin-Decker Corp., Long Beach, Calif. This instrument, the Sealtite drilling control, is assembled with steel-shielded rubber hose and steel fittings instead of the conventional copper valves and tubing, making it leakproof and pressure-tight throughout. The entire fluid system is filled, tested, and sealed at the factory. No further pumping up is required. As the instrument is connected up and ready to install when it reaches the rig, installation time is materially reduced.

The complete instrument consists of five individual units: Sealtite weight indicator, with supersensitive vernier mechanism; Sealtite mud-pump gage torque gage, tachometer, and recorder, unitized into one compact steel case. Variations in weight on bit, mud-pump pressure and torque are permanently charted by the recorder, which is mounted back-to-back with the weight indicator. This provides ample storage space in the front of the case for the rubber hose and diaphragms during transportation.

The Sealtite weight indicator has unusually large capacity, sufficient for handling 20,000-ft. wells, deeper than any so far drilled. It is indirectly illuminated for easy night reading, and indicates weight directly in thousands of pounds, or points, on a 16-in. dial face. The vernier gage hand is used for lightweight operations where extremely accurate readings are required. The mud-pump gage, torque gage and tachometer are equipped with new M-D flexoglass lenses, which are shock and pressureproof.

Important Advancements Embodied In Link-Belt's Speeder Shovel

A powerful, full-size ½-yd. convertible shovel-dragline-crane, Model LS-60, is announced by Link-Belt Speeder Corp., 301 West Pershing Road, Chicago.



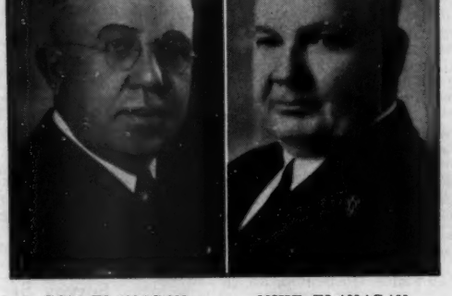
Claimed for this new model are several advancements, which include self-aligning roller bearings on drum shafts, reverse shaft, and main power shaft; a new safety-type rapid boom-hoist for crane duty, with conventional worm-geared boom-hoist optional; fully enclosed traction gears running in oil; double fully enclosed traction brakes, controlled from the cab; a 56-in. machine-finished roller path turntable with roller-bearing "hook" rollers; interchangeable clutches on drum, swing, retract, and boom hoist; welded-steel design for strength and resistance to shock load and to provide positive alignment of machinery parts; glass all around in operator's cab.

The manufacturer particularly stresses the sturdy construction and reserve power. The engine is 60-hp., gasoline or diesel, a size usually found in larger units only. Track shoes are 16-in. standard (20-in. and 24-in. optional), of the lug-driven type; or genuine "Caterpillar" tractor-type crawlers (16-in. standard, 18-in. optional), can be furnished. Both types of crawlers are smooth, nonclogging, and are provided with "recoil" springs.

AMONG EQUIPMENT MEN...

Oil Show Visitors Gaso's Guests at Company's Silver Jubilee Party

Tom Flanagan, president, and Mike Flanagan, vice president, of the Gaso Pump & Burner Manufacturing Co., Tulsa, founders of that organization, will entertain



TOM FLANAGAN *MIKE FLANAGAN*

oil men and "old timers" in the industry on May 22 with a luncheon and party at Shamrock Lodge, Apache and North Harvard avenues, Tulsa. These affairs, given by the two Flanagans at each International Petroleum Exposition have earned a place as one of the highlights of the show season for renewal of acquaintanceships in an atmosphere of good food, fine entertainment and good cheer. Happy Fenton's orchestra has been engaged for the afternoon.

This biennial event takes on special significance this year as 1940 is the twenty-fifth anniversary of the building of the first Gaso pump. The company is celebrating its silver jubilee and oil men are urged to attend this year's party and join with the company's staff in commemorating the twenty-fifth birthday.

The company began business in 1915, in a garage 10 by 16 ft. Today it taxes the facilities of two affiliated plants in Tulsa with upwards of 60,000 ft. of floor space, those of the Gaso Pump & Burner Manufacturing Co. at 902 East First Street, and the Tulsa Iron Works Co., at 1632 East Fifth Place.

Gaso entered upon the manufacture of oil-industry pipe-line pumps in 1915 to fill a need for an extra sturdy pump especially designed for grueling field service and requiring a minimum of attention. The pumps first designed and placed in service met with wide approval, and in the quarter century which has since elapsed more than 22,000 Gaso pumps have been placed in pipe-line service.

BUSINESS NOTES

Manning, Maxwell & Moore, Inc., Bridgeport, Conn., maker of valves, gages, safety valves, thermometers and control instruments, has transferred R. F. Heath from Houston, Tex., to New Orleans, La., formerly covered by Jack Schuyler.

New Arc-Welding Handbook Ready

Results of 20 years of fact-finding by 200 arc-welding experts are presented in the sixth edition of "Procedure Handbook of Arc-Welding Design and Practice," published by the Lincoln Electric Co., Cleveland, Ohio. It contains up-to-date facts about all aspects of arc welding and its many profitable applications, compiled and edited for quick reference and easy understanding. This volume of 1,152 pages and 1,557 illustrations is in eight parts: (1) Welding methods and equipment; (2) technique of welding; (3) procedures, speeds and costs; (4) weld metal and methods of testing; (5) weldability of metals; (6) machine design; (7) structural design; (8) actual applications. It is sent postpaid for $1.50 in the United States, $2 elsewhere.

Miers Joins Southwest Supply Co.

Shep Miers, formerly with Kerotest Manufacturing Co., now represents the Southwest Supply Co., of Pittsburgh, Pa., as manager of sales in the Texas division, which comprises Texas, Louisiana, Arkansas, New Mexico, and Mississippi. Mr. Miers' new connection became effective May 1. His headquarters are in Houston, Tex.

Houston Is Forrow's Headquarters

E. W. Forrow, vice president of Security Engineering Co., Inc., has made Houston, Tex., his headquarters, as a stratigic point for distribution of Security equipment.

Security's expanding market during the past 6 years has led to the establishing of eight sales districts. The Gulf Coast headquarters in Houston was established in September 1938, gaining ready access by water to South American markets. The company has installed new equipment in the Houston plant for the manufacture of drillable wire-wrapped screen. Mr. Forrow returned recently from a trip to South American oil fields, during which he visited Trinidad, eastern and western Venezuela, and Columbia.

Riggs Southwestern Representative

Bucyrus-Erie Co., South Milwaukee, Wis., which recently introduced a new line of oil-well spudders, has appointed Raymond C. Riggs as its Texas and Oklahoma sales representative for this line of drills. His office is in the Magnolia Building, Dallas, Tex. Mr. Riggs, better known to many southwestern oil-field operators for the past 16 years as "Little Doc," was brought up in the oil business, having been associated with his father, E. R. "Doc" Riggs, until the latter's death.

Since graduating from Center College, Danville, Ky., where he majored in petroleum engineering, Mr. Riggs has worked in the drilling, production, and refining divisions of the oil industry and understands the problems confronting oil-field operators.

CLASSIFIED ADVERTISING

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All cases submitted given personal attention.
Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorney's Fees"—FREE.
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Patents, searches and opinions
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Experience in Oil Equipment
323-324 Insurance Bldg., Fort Worth, Tex.
212 Kellogg Building, Washington, D. C.

Leases and Drilling Block

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

BROKERS and SALESMEN
only
A complete SERVICE EXPERTS in every department of the Oil Business at your SERVICE a REAL SET-UP. The best opportunity ever offered you. Leases in large or small lots at
WHOLESALE PRICES
Write today and get started right.
OIL BROKERS EXCHANGE
Santa Fe, New Mexico.

NEW MEXICO WEEKLY OIL REPORT. Send for sample copy. BOX 968, HOBBS, N. M.

EAST TEXAS Trinity sand wildcats. Major Company blocks will start shortly. Two strikes recently made. Three others likely prospects next Sixty days. If you have some money and sense enough to give these Majors credit for having some sense, there's a likely chance you might make some quick money.

E. CROFT
Proctor, Texas.

CRANE-WARD County 20 ac. cheap in fee, under Magnolia lease. J. G. Smith, 215 Littlefield Bldg., Austin, Texas.

2,000 ACRES oil lease one year free for an oil test. Give reference. Box 362, Merkel, Taylor Co., Texas.

FOR SALE: In need of money will sacrifice 80-acre lease of my farm located in West Harrison County joining block which has just started drilling. Per acre $12.50 cash and $12.50 in oil. E. O. WILLIAMS, Marshall, Texas.

FOR SALE—10 acres. Sequoyah Co., Okla. NE ¼ of S.E ¼, of SW ¼, Sec. 20. Twp. 13n. Range 26e. James C. Barry, 3505 Legation St. N.W., Washington, D. C.

FOR SALE: Three acres producing royalty in Bibby Unit, Cass County side Rodessa field. Low price. Need cash. S.A.H., 14 College Campus, Lake Forest, Ill.

5000 ACRES Indiana on old gas field. Good chance for Devonian. Will drill well and assign acreage except offset 80 with two other 80s in block, for $1200. Address Box K-611, The Oil and Gas Journal, Tulsa, Oklahoma.

OWNER of acreage where only oil producer was ever found in Alabama; gasser producing today. Want cooperation parties financially able to develop leases. D. V. Mann, Lyons Hotel, Decatur, Alabama.

WE are in the market for settled oil producing properties in Okla. or Kansas. United Oil & Gas Co., Tulsa, Oklahoma.

Leases and Drilling Blocks

FOR SALE Oil and gas leases and small production located in Kentucky shallow field, and leases located in Clay County, Tenn. Have for sale two tracts of proven Fluorspar and Zinc deposits; reports furnished on request. W. P. Harley, Bowling Green, Kentucky.

NEW MEXICO
STATE OIL AND GAS LEASES
40 acres and multiples thereof. $6.00 to $60.00 per forty. Buy direct. Save those dollars. No middle man to pay; no salesman to bother you! Twenty years in the business without a complaint. Write for information.
HARRY S. WRIGHT
New Mexico State Lessee
Wright Bldg., Farmington, New Mexico.

CRANE CO., oil possibilities, cheap fee land, 3 mi. E. Ward Gulf-Wristen drilling. J. G. Smith, 215 Littlefield Building, Austin, Texas.

GIVE 1/16th interest 80-acre shallow oil lease to party to drill and equip first well. C. L. Milburn, Corsicana, Texas.

WEST TEXAS OIL LEASES
AND ROYALTIES
If you wish to buy or sell producing or Non-producing oil leases or royalties located in West Texas or Eastern New Mexico; Address:
AMERICAN NATIONAL BROKERAGE CO.
Post Office Box 516
Levelland, Texas.

FOR complete and accurate coverage of the new Artesia Area, read The ARTESIA (New Mexico) ENTERPRISE. $2 a year.

40-ACRE lease, Cowley Co., Kans., ¾ mile south Weathered pool, in trend. Will sell outright, or assign, retaining small int. for play. Lee Smith, Hoisington, Kans.

NORTHEAST quarter, Section 15, Township 6, Range 1w, Cleveland County, is open for lease. W. A. PARTRIDGE, Sand Springs, Oklahoma.

DRILLER has 290 A. proven gas lease. Wants partner. Must have $2,000 cash to finance drilling. Room 601, 507 South Main Street, Tulsa, Oklahoma.

DRILLING BLOCK, 10,000 acres in Huerfano County, Colo. new field. Also small leases in shallow area. Will make deal to develop. It's the coming field with gas, shallow and deep oil. S. W. Pressey, Pueblo, Colorado.

HAVE 2—160-acre leases, one in Geneseo pool and one in Hauschild pool, Rice County, Kansas. Both close to production, ready to drill. Very reasonable proposition on one or both. P. A. Hollenbach, Route #4, Box 46, Houston, Texas.

Leases and Drilling Blocks

SALESMEN & BROKERS, if interested handling real developments in shallow field Huerfano County, Colo. drilling 10 wells off-setting production. Pay off big. Write, G. A. Horney, Box 614, Pueblo, Colo.

PRODUCING Gas or Oil Leases bought. Or will drill shallow proven acreage anywhere. Describe fully or no reply. Box 93, Tulsa, Oklahoma.

Ranches—Farm Lands

RANCH HOME
PROFIT AND PLEASURE
SMALL RANCH—Select registered Hereford Herd. Natural beauty spot and show place. Outskirts San Antonio, Texas. Main highway to California. Macadam roads throughout. Buildings of native stone overlooking fertile river valley land under cultivation; corn, oats, alfalfa other feed stuff. Flowing artesian wells. Automatic water system through buildings and pastures. All city conveniences. Modern farm and ranch equipment. Bargain quick sale. Write Box K-612, The Oil and Gas Journal, Tulsa, Oklahoma.

Mailing Lists

ROYALTY Owners, Oil Investors, Unit Holders, Stockholders in Oil, Royalty and Mining Companies. Personnel lists of every branch of oil industry. All by states. We buy or swap lists. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Okla.

ROYALTY, lease and oil investors in any state. Catalogue. Flory Co., Box 105, Fort Worth, Texas.

Survey Service

REMEMBER EAST TEXAS
When all other methods fail, employ my divining or dowsing method. If oil exists this method finds it. Faults, broken treacherous areas accurately defined. Our Watson #2, first producer Wilmington, Calif. field, located by this method. More reliable than mechanical geophysics. Ask any unbiased oil authority. Many years' experience. A wise man investigates. George Miller, 1548 Post, Torrance, California.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog, samples on request. Burkhart Ptg. & Sta. Co. 115 S. Cinn. Tulsa, Oklahoma.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

Brokers—Salesmen

Sell in the most active area in the United States—The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. All offerings meet the requirements of the Security and Exchange Commission. Inquiries invited.

B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

PURCHASERS AND DISTRIBUTORS
PRODUCING ROYALTIES
Registered with S. E. C.
INVESTMENT ROYALTIES, LTD.
Ramsey Tower, Oklahoma City, Okla.

WANTED: Texas producing royalties. Small interests preferred. O. L. Grimes, Tulsa Loan Building, Tulsa, Oklahoma.

WE ARE IN THE MARKET FOR
DISTRESSED OIL PAYMENTS
WILDCAT OR PRODUCING
OIL ROYALTIES
Send Plat and Full Particulars
Immediate Action.
F. A. SANSOME, 522 5th Ave., New York.

LANDOWNER offers half interest in ⅛ royalty on 600 acres southwest Sherman County, Texas, 3 miles west of Davis well, prod. two hundred million cu. ft. sweet wet gas; 2 miles S. W. of Bryan No. 1, drilling at 5158 ft. H. D. Hobson, 1300 Riviera Ave., Venice, California.

Help Wanted

WANTED experienced manager with complete knowledge of both the technical and commercial end of the manufacturing of Ceresin Wax and Ozokerite Wax. Reply in detail to Box K-602, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED: Experienced Asphalt and Emulsified Asphalt Tester. Must be college graduate. State experience. Address Box K-613, The Oil and Gas Journal, Tulsa, Oklahoma.

Situations Wanted

REFINERY Process Engineer, Chemical Engineer, 20 years diversified industrial experience including process research, development, design, consultation, refinery operation. Capable executive; excellent record in handling labor and lowering production costs. Outstanding ability to analyze refinery requirements and processes. Desires position as refinery executive in operation or engineering. Address Box K-534, The Oil and Gas Journal, Tulsa, Okla.

DRILLING and production superintendent, Rotary or cable tools desires position with active reliable company. References from present employers. C. R. Todd, 506 Continental Building, Dallas, Texas.

THIS ad single appearance only. Petroleum engineer available, 4 yrs. production, exploitation, exploration experience. Speaks Spanish, Portuguese, understands foreign problems. Prefers development, executive or sales, can participate financially in small development. Address Box K-610, The Oil and Gas Journal, Tulsa, Oklahoma.

PETROLEUM Engineer: Young production engineer desires position as scout or engineer with small company or independent operator. Address Box K-593, The Oil and Gas Journal, Tulsa, Oklahoma.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30
4 Lines	1.40	2.40	3.40	4.40
5 Lines	1.75	3.00	4.25	5.50
6 Lines	2.10	3.60	5.10	6.60
7 Lines	$2.45	$4.20	$5.95	$7.70
8 Lines	2.80	4.80	6.80	8.80
9 Lines	3.15	5.40	7.65	9.90
10 Lines	3.50	6.00	8.50	11.00

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1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

Situations Wanted

I KNOW something of installations and connections, bottom-hole tests, paraffin removal, mud conditioning, care of cores and samples, office work, and plain ditch digging. I'm 28, single, have three years flush production experience and 2 college degrees (not engineering). Other useful abilities, would try selling, go anywhere. Can you use me? Box 2222, Norman, Oklahoma.

For Sale—Maps

E. B. ROBINSON MAPS
Jackson, Miss. 3-Hart Bldg., Across Street from Heidelberg Hotel. Ownership maps All Over Mississippi.

1940 OIL AND GAS FIELD MAP
Texas, Eastern New M. Price $1.00. Wildcat Map $3.00 Published monthly. ZINGERY OIL MAP CO., Fort Worth, Tex.

For Sale—Equipment

FOR SALE: In Oklahoma City field, 10 twin type 80 horizontal cooper single acting 4 cycle engine compressors, Indian Territory Illuminating Oil Company, Bartlesville, Oklahoma.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio

FOR SALE—50,000'—10" 32# P.E. pipe also, 50,000' 10" 40# P.E. pipe. All strictly #1 and ready to load: located at Wichita Falls, Texas. For further information communicate with
CENTURY PIPE & SUPPLY CO.
800 N. Main St., Fort Worth, Texas.
Phone 6-2713.

NEW CASING COUPLINGS — For sale at big discount: 150 brand new, 10¾ inch, 8 V-thd. Casing Couplings, 8½ inches long. Good heavy couplings, all in perfect condition. Excellent bargain for pipe repair shop. Bridgeport Machine Company, Wichita, Kansas.

FOR SALE at Oklahoma City Warehouse, large quantity 4¾" o.d. 16#, 5" o.d. 15# slotted-perforated liner and Stanciff screen pipe. I. T. I. O. Company, Bartlesville, Okla.

FOR SALE
5—165 H.P. Type X Bessemer Direct Gas engine driven compressors.
5—80 H.P. Type X Bessemer direct gas engine driven compressors.
6¼" to 18" compressor cylinders for above engines.
1—I.R. Imperial Type Duplex Comp. belt driven 5½" x 12".
3—7' x 30' 50# Gasoline Storage tanks.
4—70 to 85 H.P. Boilers retubed with Okla. State inspection.
1—#25 Southwestern Distillation unit completely rebuilt with instruments.
1—60" x 42' Absorber Wyatt Shell 16 Southwestern Bubble Cap Trays.
2—Each, 72" x 30' and 60" x 30' Southwestern Absorbers. 10 Trays with 2 mist extracting Trays.
2—48" x 30' H.P. Southwestern Type Absorbers.
1—3¼" x 10" F. & M. Belt Driven Geared Duplex Pump.
3—6" x 4" x 6" Nat'l. Tran. Pumps.
20—High and low pressure scrubbers and accumulators.
Telephone or Write for prices.
W. S. SMITH
412 Thompson Building
Phone 2-5473
Tulsa, Oklahoma.

FOR SALE: One set new, two sets slightly used 6½" Spang weldless drilling jars 3⅛—4¼—7 in. I.T.I.O. Co., Bartlesville, Oklahoma.

For Sale—Equipment

For Sale—Equipment

For Sale—Equipment

We Extend an Invitation to ALL OUR FRIENDS and CUSTOMERS to Visit Our Office and Yard During THE INTERNATIONAL PETROLEUM EXPOSITION

Transportation will be available for inspection trips to the Barnsdall Refinery—Okmulgee, Oklahoma—which we are now dismantling—telephone for arrangements—local 5-3175—LD 410.

We are presenting for your entertainment
COVERT & REED
Appearing nightly at the Marine Grill of Mayo Hotel

SONKEN-GALAMBA SUPPLY CORPORATION

W. C. Berry and H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

COMPLETE
ROTARY DRILLING RIG
Steam Powered — Priced to sell.
Ready to go.
H-54 EMSCO Unitized Draw Works
25½" EMSCO Rotary Table
3—125 hp 350# up Kewanee Boilers, recently retubed. 2—14 x 4½ x 18 Wilson-Snyder slush pumps with all auxiliary equipment for efficient operation. This rig has been well maintained and now ready for service. Located in Seminole area. With or without 5000' 6⅝" drill pipe. For details and price write
PIONEER DRILLING COMPANY
1411 Nat'l. Bank of Tulsa Bldg.,
Tulsa, Okla.

USED CASING COUPLINGS—Attention, Repair Shops. We are closing out all our used Casing Couplings. Have all sizes from 5" OD to 15½" inclusive. Exceptional opportunity to fill your requirements at extremely low prices. Bridgeport Machine Company, Wichita, Kansas.

FOR SALE

25,000 ft. of 4" seamless drill pipe equipped with both full hole and regular tool joints.
10,000 ft. of 7" 24# seamless casing, once run.
5,000 ft. of 7" 26# seamless casing, once run.
10,000 ft. of 2½" seamless tubing, used for flowing wells only.
We also have several complete drilling rigs, one with Unitized Draw Works capable of drilling 6,500 ft. The above is located in Shreveport, Louisiana.
We also have 30,000 ft. of 6" screw line pipe located in Oklahoma.
Wire, Write or Phone for Prices
Louisiana Iron & Supply Co.
Shreveport, Louisiana

MFG. RIGHTS — Patent #1851894, Oil Well control device. Make cash offer. E. Funke, 1230 W. 8th, Los Angeles, Calif.

TRACTORS
Government crawler type Caterpillar size "35" $375; size "65" with nigger head winch $750; Trailbuilder Cletrac "55" with angledozer $1125; Caterpillar RD8 with bulldozer $2000; Allis-Chalmers Model L with bulldozer $1750. All slightly used overhauled, guaranteed. O. C. EVANS, Mount Sterling, Kentucky.

"Motor Sales" Proof
LUBRICATING GAS-O-LINE
AND SAVE
3 to 6c on GASOLINE. 25 to 40% Motor Expense. Original and Genuine lubricating Anti-Knock Additive makes cheap GASOLINE good, and high-test Gasoline better, or highest powered Gasoline on American Market. Prove it for yourself. Introductory Delivered Price 98c on $2.50 package. Responsible Dealers Wanted.
LUBRICATING GASOLINE CO., HOUSTON, TEXAS

FOR SALE: Star #28 beam steam machine lines and tools complete. Box 592, Emporia, Kansas.

FOR SALE: 1500 bbl. oil refinery located Chicago area, now operating on Illinois crude oil. Complete pipe still, tankage, treating equipment, truck and tank car loading facilities, etc. Established business and complete organization. Price $25,000. Address Box K-552, The Oil and Gas Journal, Tulsa, Okla.

TEXROPE SHEAVES — Large assortment sizes and types slightly used "A," "B," "C," and "D" Section Texrope Sheaves. Good as new. Will turn entire lot to shop at almost "give-away" prices or will sell "piece-meal" at fraction of original cost. Sheaves of over 20 specifications in the lot. Bridgeport Machine Company, Wichita, Kansas.

MANUFACTURER or Sales organization to distribute exclusively, a new, radically different, drill bit proved 25% to 65% more efficient than the fish tail, in all formations and depths. Liberal terms. Kless, 414 Stratford St., Houston, Texas.

FOR SALE cheap at Oklahoma City, 16" O.D. 28# and 20" 35# Naylor plain end Spiralweld pipe, suitable for surface pipe. I.T.I.O. Company, Bartlesville, Oklahoma.

WRECKING Oil State Gasoline Plant 1 mile North Jenks bridge or 9 miles South of Tulsa. All machinery, buildings, tanks, pipe lines, etc. for sale. For list of material address P. O. Box 745, Tulsa, Okla. Phone 3-8308.

LESS THAN $90 EACH — Buys set of brand new Bridgeport Cable Tool Bits #1032 at Pampa. Size, 15½-inch, 7-foot 3-inches long, 4 x 5 Pin. Bridgeport Machine Company, Wichita, Kansas.

FOR SALE: 7 ft. x 20 ft. Butane welded storage tanks 125# WP, capacity 6000 gallons. I.T.I.O. Co., Bartlesville, Okla.

FOR SALE
Late Model K Type Star rig either with or without power, tools and light plant. The Veeder Supply & Development Co.
P. O. Box 270 Phone LD 2
Cherryvale, Kansas.

USED 15⅛" SEAMLESS CASING—Very attractive price on all or any part of 600-feet, 16" OD (15½") 55-lb., 8-thd. long collar Used Seamless Casing. A-1 quality, suitable for long string or surface pipe. Located in Western Kansas. Bridgeport Machine Company, Wichita, Kansas.

Equipment Wanted

WILL purchase for cash, small natural gasoline plant, preferably located in Kansas, but will consider Oklahoma or Texas unit. Must be genuine bargain. Might consider inactive plant at better than junk value. Address Box K-580, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED
Several second-hand spudders, all kinds of cable tools, casing up to 12⅝" for shallow wells, one medium size tractor and any other kind of equipment suitable for cable tool drilling. Will buy in large quantities, for several operators. Will arrive in Tulsa, from Cuba, on or about May 18. Write to Chas. Ginart, c/o General Delivery, Tulsa, Oklahoma.

WANTED—Two used Clark 12 in. bore by 14 in. stroke double acting compressor cylinders complete. Type RA-2S. Address Hanley and Bird, Bradford, Pennsylvania.

WANTED—Manufacturing plant (operating or closed) for paraffin wax, ozokerite wax, ceresin wax. Detailed reply to Box K-606, The Oil and Gas Journal, Tulsa, Okla.

Financing

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

JOHN MORRIS, Box 5411, Philadelphia, studied records 5000 financial houses. Found only 191 buy new issues. $4.00.

Incorporations

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guver. Inc., Wilmington, Delaware.

CHARTERS — Delaware best, quickest, cheapest, more liberal. Free forms. Colonial Charter Co., Wilmington, Del.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Gulf Coast Markets

(Continued from Page 143)

ma. Important refiners have no more available empty storage, and will have to unload shortly. However, with tankers becoming increasingly difficult to charter, these refiners, even if they should find the buyers, faced an embarrassing position. A substantial volume of gasoline still is being moved out of Gulf Coast ports to the Atlantic seaboard by companies having their own boats or long-time charters, and having regular outlets, but those sellers depending on picking up tankers as occasion arises are hard hit.

What the gasoline market was during the week was a question few ventured to answer in the absence of spot movement. Sellers indicated they would be willing to shade even past low quotations if it would enable them to move material immediately.

The situation is impelling an increasing number of independent refiners to curtail their crude runs. Two large independent refiners have curtailed runs 20 per cent, effective May 1. Two others are being placed on a part-time basis.

No change was evident in lubricating oils, which, although easily available, are holding firmly in price.

Tank-Wagon Changes

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throughout Washington owing to removal of state tax of that amount.

Standard Oil Co. (Indiana) April 29 reduced tank-wagon gasoline 1.5 cents in Fargo; May 1, advanced dealer gasoline and tank-wagon kerosene 0.5 cent.

Socony-Vacuum Oil Co., Inc., May 1 reduced consumer tank-car gasoline 0.5 cent in Albany, metropolitan New York, Syracuse, Portland, Burlington, Boston, Worcester, Hartford, New Haven, and Providence; 0.4 cent in Manchester. May 2 reduced dealer tank-wagon gasoline 0.5 cent in Albany, metropolitan New York, Syracuse, Burlington, Boston, Hartford, New Haven, and Providence; 0.6 cent in Portland; 1 cent in Worcester.

Atlantic Refining Co. April 2 advanced dealer tank-wagon gasoline 0.5 cent in Dover.

Imperial Oil, Ltd., April 22 reduced tank-wagon gasoline and kerosene 0.5 cent in Regina.

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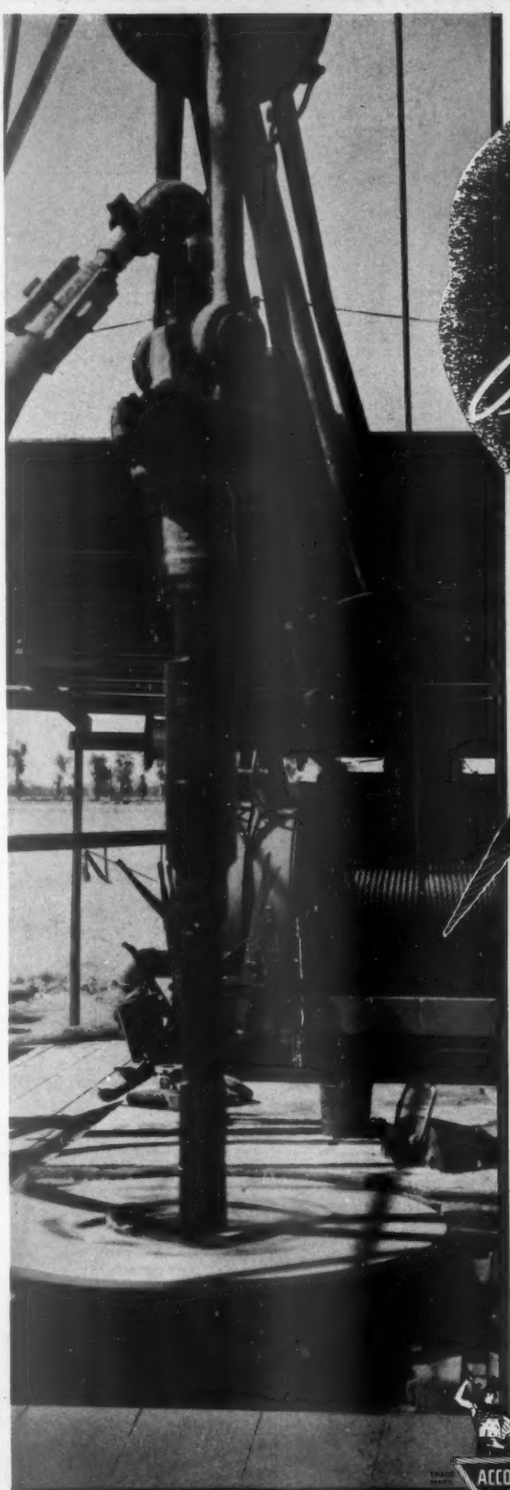

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